XMPP & Cross Domain Collaborative Information Environment (CDCIE) Overview For Net-Ready Sensors Summer Workshop

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doc rev 1.2

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Disclaimer

- **We are endorsing open standards vice products.**
- The products chosen for CDCIE were those products that best suited our needs at the time the project started and they may be replaced in the future.

Agenda

- Overview of CDCIE Project
- Overview of XMPP
- CDCIE Chat Details
- CDCIE Chat Slideshow Demo
- Overview of Web Services Gateway

Overview of CDCIE

Mission

- Develop a standards based, non-proprietary, open source, secure, scalable collaborative information environment (CIE) to enable cost-effective multinational information sharing (MNIS) in both single and cross domain environments.
- **<u>Impact:</u> Provide the warfighter near-term capability to share information from one network to another**

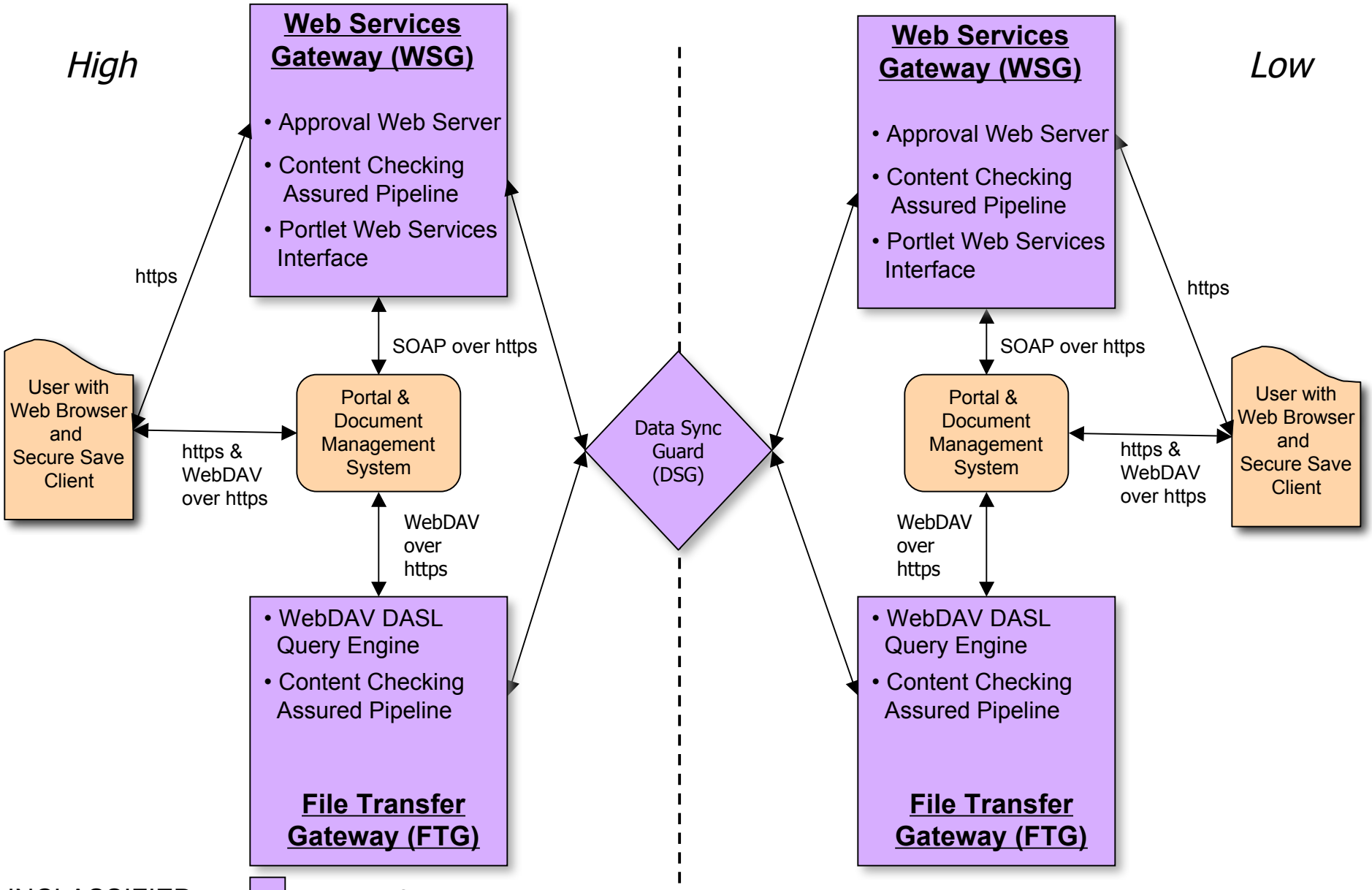
CDCIE Phases

- CDCIE 2.1 - NSA CT&E Complete Oct 1st 2006
  - Cross Domain Multi-User Text Chat
  - Language Translation
  - Cross Domain XML Guard
- CDCIE 2.2 - Start NSA CT&E Fall 2006
  - Cross Domain Portal & Web Services
  - Cross Domain Document Management
  - Portal Applications
  - Security Enhanced Office Automation Suite (Secure Save)
  - Everything from CDCIE 2.1
  - Cross Domain XML Guard
- CDCIE 2.3 - Start NSA CT&E Winter 2007
  - Cross Domain Whiteboard
  - Cross Domain Audio
  - Cross Domain Application Casting
  - Everything from CDCIE 2.2
  - Cross Domain XML Guard

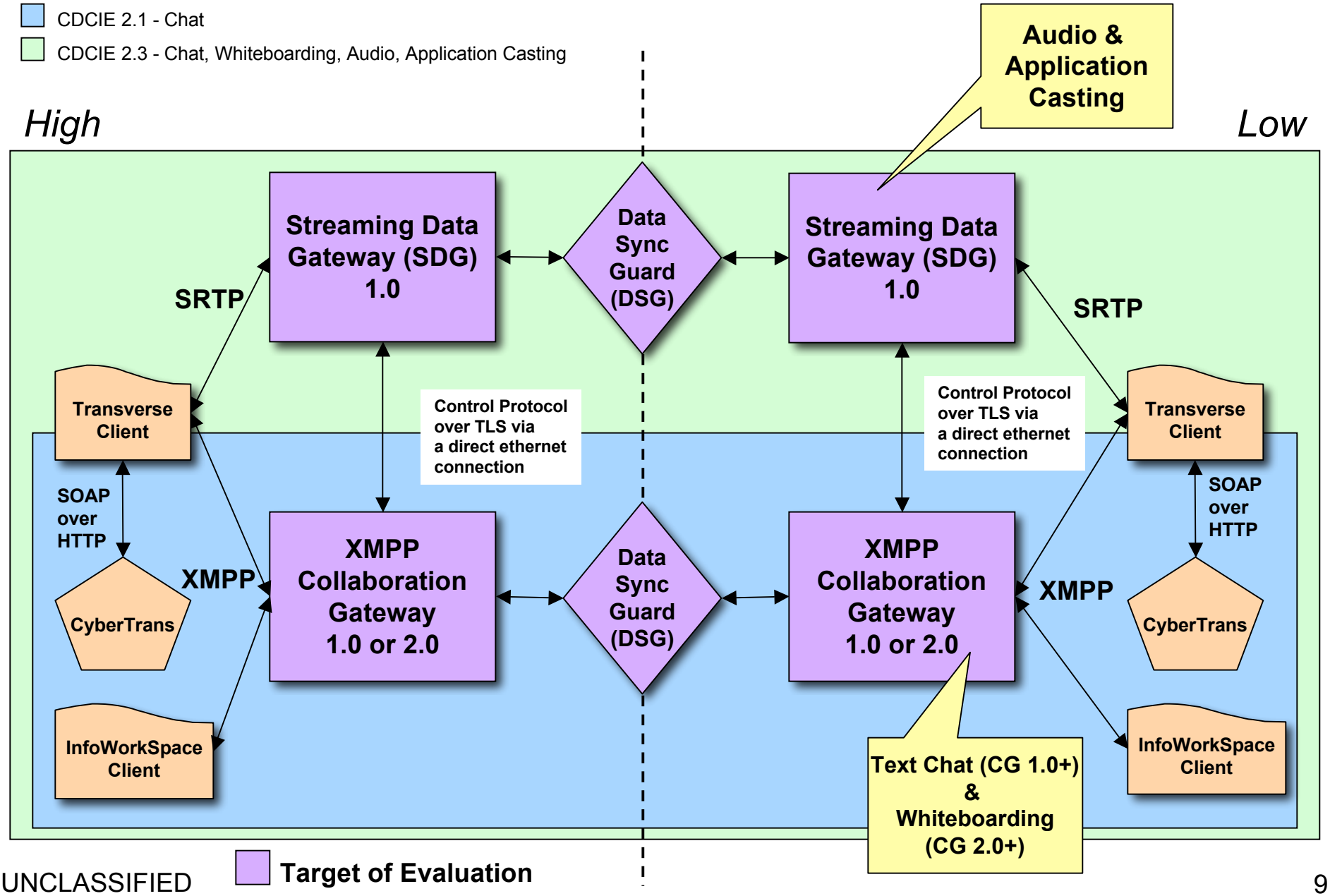
CDCIE Components

- CDCIE 2.1
  - Collaborative Gateway (CG) 1.1 - Trident Systems, COTS
  - DataSyncGuard (DSG) 2.1 - BAE Systems, COTS
  - TransVerse 1.0 (formally called Buddyspace), GOTS/Open Source
  - Optional: InfoWorkSpace (IWS) 3.0, Ezenia, COTS
- CDCIE 2.2
  - Web Services Gateway (WSG) 1.0 - USJFCOM, GOTS
  - File Transfer Gateway (FTG) 1.0 - USJFCOM, GOTS
  - DataSyncGuard (DSG) 3.0 - BAE Systems, COTS
  - Secure Save 2.0 - GOTS/Open Source
- CDCIE 2.3
  - Collaborative Gateway (CG) 2.0 - Trident Systems, COTS
  - Streaming Data Gateway (SDG) 1.0 - GOTS
  - DataSyncGuard (DSG) 4.0 - BAE Systems, COTS
  - TransVerse 3.0, GOTS/Open Source

CDCIE 2.2 High Level Design



CDCIE 2.1 & 2.3 Collaboration Tool High Level Architecture



Overview of XMPP

What is XMPP

- **XMPP – eXtensible Messaging and Presence Protocol (aka Jabber)**
- XMPP is a set of streaming XML protocols and technologies that enable two or more entities on the Internet to exchange messages, presence, and other structured information in close to real time. XMPP is more than just IM, and XMPP technologies offer several key advantages:
- **Open** -- the XMPP protocols are free, open, public, well defined, and easily understandable; in addition, multiple implementations exist for clients, servers, components, and code libraries.
- **Standard** -- the Internet Engineering Task Force (IETF) has formalized the core XML streaming protocols as an approved instant messaging and presence technology under the name of XMPP.
- **Proven** -- the first XMPP technologies were developed by Jeremie Miller in 1998 and are now quite stable; hundreds of developers are working on XMPP technologies, there are a 10K+ XMPP servers running on the Internet today, and ***millions*** of people use XMPP for IM.

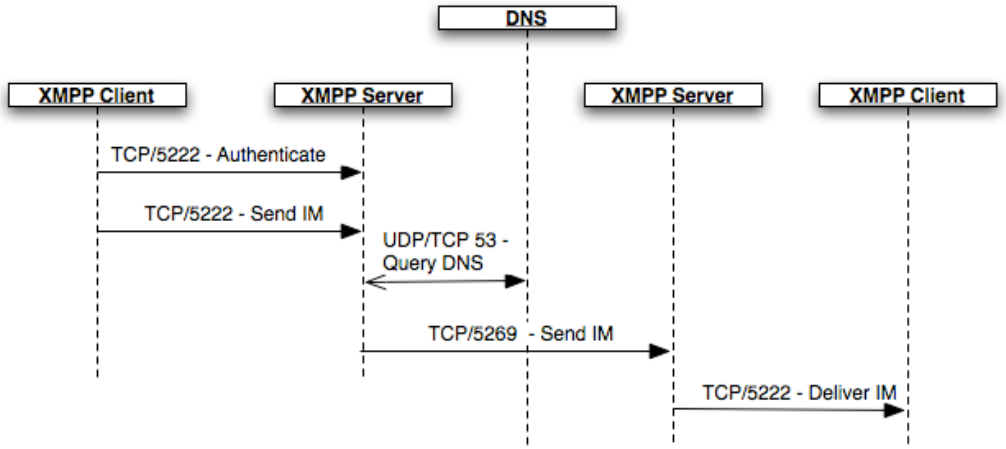
What is XMPP (cont.)

- **Decentralized** -- the architecture of the XMPP network is similar to email; as a result, anyone can run their own XMPP server, enabling individuals and organizations to take control of their IM experience.
  - XMPP addresses resemble email addresses. For example: boyd@xmpp.je.jfcom.mil is a Jabber ID (or JID).
- **Secure** -- any XMPP server may be isolated from the public XMPP network (e.g., on a company intranet), and robust security using SASL and TLS has been built into the core XMPP specifications.
- **XML Based** -- XMPP is implemented in pure XML and has well-defined schemas.
- **Extensible** -- using the power of XML namespaces, anyone can build custom functionality on top of the core protocols; to maintain interoperability, common extensions are managed by the Jabber Software Foundation.
- **Flexible** -- XMPP applications beyond IM include network management, content syndication, collaboration tools, file sharing, gaming, and remote systems monitoring.
- **Diverse** -- a wide range of companies and open-source projects use the XMPP protocols to build and deploy real-time applications and services; you will never get "locked in" when you use XMPP technologies.

XMPP is an Open Standard

- One of two Presence, Instant Messaging and Text Chat protocols approved by the IETF (Internet Engineering Task Force)
  - http://www.ietf.org/html.charters/xmpp-charter.html
- The Jabber Software Foundation (www.jabber.org) controls extensions to XMPP like Multi-User Chat (MUC) and Language Translation
- On Oct 4th 2004 the XMPP suite of specifications were published.
  - **RFC 3920: Extensible Messaging and Presence Protocol (XMPP): Core** -- The core XML streaming technology that powers Jabber applications, including advanced security and internationalization support.
  - **RFC 3921: Extensible Messaging and Presence Protocol (XMPP): Instant Messaging and Presence** -- Basic IM and presence extensions, including contact lists, presence subscriptions, and whitelisting/blacklisting.
  - **RFC 3922: Mapping the Extensible Messaging and Presence Protocol (XMPP) to Common Presence and Instant Messaging (CPIM)** -- A mapping of XMPP to the IETF's abstract syntax for IM and presence.
  - **RFC 3923: End-to-End Signing and Object Encryption for the Extensible Messaging and Presence Protocol (XMPP)** -- An extension for interoperable, end-to-end security.

How XMPP Works



- XMPP is both a client-to-server and server-to-server protocol.
  - Messages are not sent directly between clients, but are instead sent from a sender's client to his server and his server delivers the message to recipient's server which then delivers the message to the recipient's client.
  - If the recipient is not online then, if enabled on the server, the server will queue the message for delivery for when the user comes back online.
- Servers find each other using the Domain Name System (DNS). The recipient's server name is the hostname to the right of a user's JID. For example in the JID boyd@xmpp.je.jfcom.mil the XMPP server's name is xmpp.je.jfcom.mil
  - DNS is Internet wide system used to convert hostnames (like xmpp.je.jfcom.mil) to IP Addresses (like 140.32.76.158). Computers use IP addresses to talk to each other.
- In the example above:
  - The sender's XMPP client opens a client-to-server TCP connection on port 5222 to the XMPP server and authenticates the user
  - The sender's XMPP client uses the TCP connection above to send a XMPP Instant Messaging packet to his server.
  - The sender's XMPP server looks up the IP address of the recipient's XMPP server based on the recipient's JID.
  - The sender's XMPP server opens up a server-to-server TCP/IP connection on port 5269 to the recipient's XMPP server and send the sender's IM.
  - The recipient's XMPP server uses the recipients client-to-server connection to send the IM to the recipient's XMPP client.

Industry Support

- Major commercial supporters/users of XMPP include:

Jabber Inc.	Oracle	Red Hat	France Telecom	Sun Microsystems	AT&T
Bellsouth	Polycom	Ericsson	General Dynamics	NGC	Boeing
AOL	Lockheed Martin	Mantech	IBM GS	DoCoMo	Vonage
NEC	Portugal Telecom	BT Syntegra	OpenText	Ezenia	McKesson
Mitre	Sony	Antepo	Apple	EDS	Hitachi
DeskNow	Tipic	Merak	Rhombus	Cerulean Studios	Avaya
Coversant	Google	Cisco			

- Commercial and Open Source server implementations running on Solaris, Windows, Linux, HP-UX, Mac OS X
- Commercial and Open Source client implementations running on Solaris, Windows, Linux, HP-UX, Mac OS X, PalmOS, Windows CE, Symbian, modern web browser (IE 5.x+, Mozilla, Firefox, Safari, Opera), and any platform capable of running Java Standard (J2SE) or Micro (J2ME) editions.

Some Government Programs Using XMPP

- USJFCOM J9 CDCIE Project
  - Cross domain text chat with translation
- CIA Crosstalk
  - Cross domain text chat
- TRiM/Coalition Chat Line
  - Translating text chat
- EUCOM's Multination Collaboration Environment (MNCE)
- Naval Research Lab's ML Chat
- Dept of the Navy's ForceNET
- Air Force TBMCS
- Mitre Collaborative Data Objects (CDO)
- The Intelligence Community (IC) has started deployment of XMPP on JWICS
- Army Future Combat Systems
- Multi-Sensor Aerospace-Ground Joint Interoperable ISR Coalition (MAJIIC)
  - Both US and NATO elements
- Horizontal Fusion
- Department of Homeland Security
- Project Morning Calm/Joint Intelligence Operations Center
- DISA CMO has started deploying XMPP on SIPRnet

XMPP Security Considerations

- Firewall friendly. Only two ports required:
  - Client-to-Server Port: TCP/5222
  - Server-to-Server Port: TCP/5269
- In July 2005 & April 2006, DSAWG has approved w/ caveats the use of the XMPP ports and protocol in DOD Ports, Protocols, and Services Policy
- XMPP uses the Simple Authentication and Security Layer (SASL) standard for user authentication
- Supports point-to-point transport layer encryption. Many client and server implementations support client side PKI certificates for the TLS (FIPS version of SSL) connections.
- Supports end-to-end encryption/digital signing – encrypts contents of message instead of the transport, makes secure relaying and non-repudiation possible.
- Server based architecture allows all communications to be recorded and audited on the server.
- Most server implementations support using LDAPv3 or Active Directory Authentication

XMPP's Extensibility

In addition to one-to-one text chat, presence, and group chat, XMPP also supports:

- Publish-Subscribe (PubSub)
- Language Translation
- Audio Signaling
- File Transfer
- Web Services
- Service Discovery
- Stream Compression
- Common Alerting Protocol
- Whiteboarding (soon!)
- Plus many more that are documented as part of the Jabber Software Foundation's Jabber Enhancement Proposal process
  - http://www.jabber.org/jeps

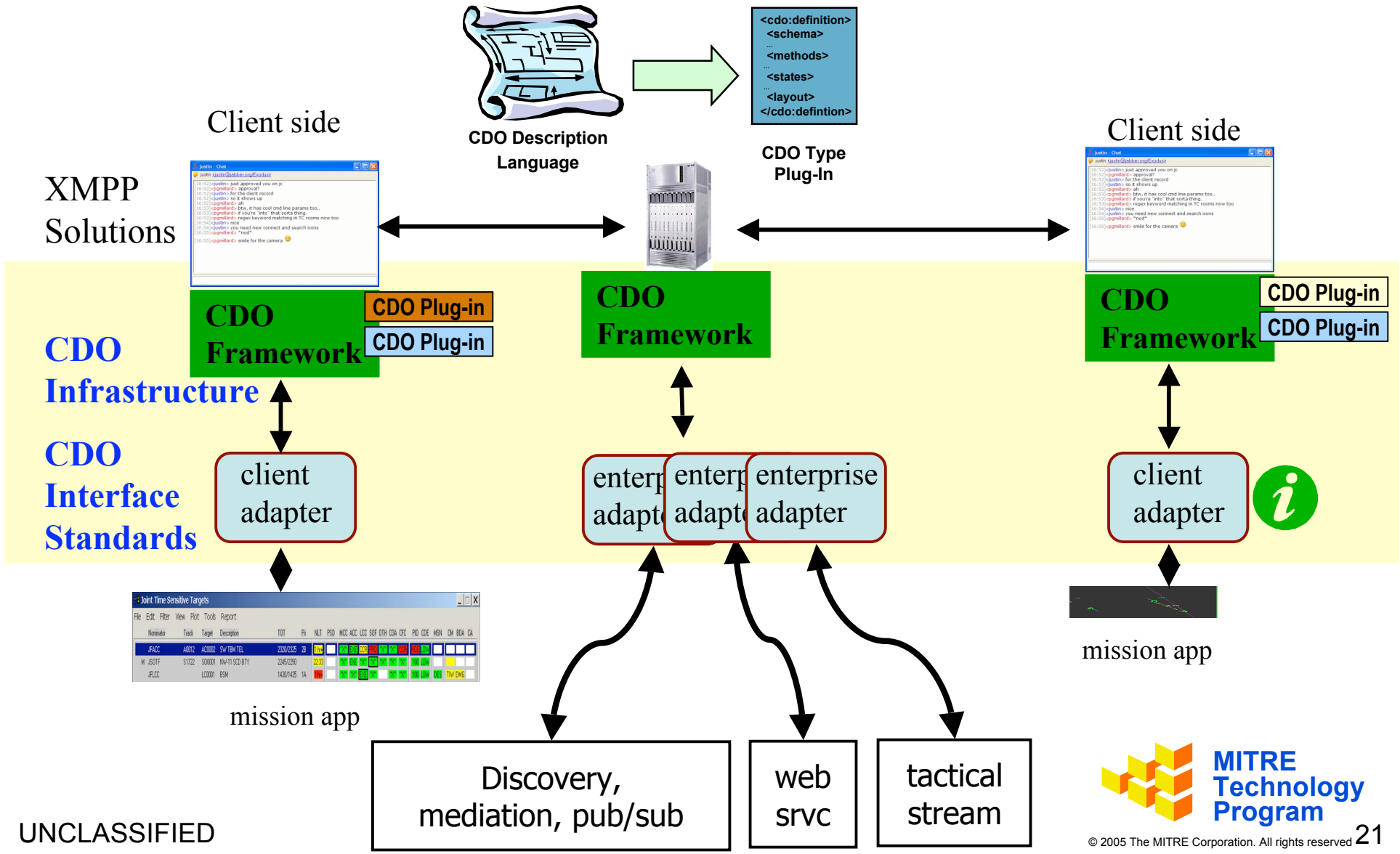
GOTS/COTS Bridges to XMPP

- Ezenia! has developed an IWS to XMPP bridge under contract with Air Force Research Lab (AFRL). This is part of AFRL's Collaboration Gateway system for cross domain chat and presence.
- Antepo has developed a XMPP to SIMPLE bridge that has been tested with Lotus SameTime.
- Jabber Inc. has a XMPP to SIMPLE bridge with support for Lotus SameTime and Microsoft Live Communications Server.
- Jabber Inc has developed an IRC to XMPP gateway for DISA.
- Groove Networks has also developed a XMPP gateway for Groove.
- In Fall 2006, IBM will be releasing a Sametime to XMPP Gateway
- MITRE has developed a SIMP (not SIMPLE) bridge to XMPP
- Jajcus' Jabber to IRC Gateway is under development
- iptel.org has an open source SIMPLE to Jabber/XMPP gateway
- There are also numerous commercial and open source bridges to AOL Instant Messenger (AIM), MSN Messenger, and Yahoo IM.

Developer Support

- There are XMPP client and server component libraries in the following languages: C, C++, C#, .Net/Mono, Java, Perl, Python, Ruby, JavaScript, and Flash.
- We have used:
  - Jive Software's free Apache licensed open source Java based Smack library extensively in XMPP client work
  - Coversant's commercial SOAPBox Framework for .Net in some of our interoperability and scalability testing.

MITRE Collaborative Data Objects



MITRE Technology Program

CDO Technical Underpinning

- Leverage modern chat technology
  XMPP (Extensible Messaging and Presence Protocol)/Jabber
  - Core protocol - XMPP (RFC 3920)
    - Stanza based, streaming XML transport
    - Core protocol extensible through JEPs
    - Many JEPs exist to support this work, this work may result in a new JEP
  - Messaging protocol - XMPP IM (RFC 3921)
    - Discovery and Presence Info
    - Point to point messaging
  - Multi-party chat - JEP 0045
    - Provides persistent room-based chat
  - Draft Jabber Enhancement Proposals
- Web Services
  - Direct via REST
  - SOAP via adapter
- Scripting technology
- POCs:
  - Michael Krutsch (michael@mitre.org)
  - Dan Winkowski (winkowsk@mitre.org)

MITRE Technology Program

XMPP References & Resources

- Jabber Software Foundation
  - http://www.jabber.org
- Standards Documents
  - http://www.ietf.org/html.charters/xmpp-charter.html
  - http://www.ietf.org/rfc/rfc3920.txt?number=3920
  - http://www.ietf.org/rfc/rfc3921.txt?number=3921
  - http://www.ietf.org/rfc/rfc3922.txt?number=3922
  - http://www.ietf.org/rfc/rfc3923.txt?number=3923
  - http://www.jabber.org/jeps
  - http://asg.web.cmu.edu/sasl/sasl-ietf-docs.html
- Books
  - *Programming Jabber: Extending XML Messaging*, DJ Adams / O'Reilly & Associates / 2002 / ISBN 0596002025
  - *Jabber Programming*, Stephen Lee, et al / Wiley / 2002 / ISBN 0764549340
  - *Instant Messaging in Java: The Jabber Protocols*, Iain Shigeoka / Manning Publications / 2002 / ISBN 1930110464
  - *Jabber Developer's Handbook*, William Wright, et al / Sams / 2003 / ISBN 0672325365

CDCIE Chat Details

The Collaboration Problem

- DoD lacks a secure, standards based, scalable collaboration system that works equally well for single and cross domain collaboration.
- DoD relies on a hodge-podge of insecure and/or proprietary protocols for text and audio chat. Examples include: IRC, IWS, Bantu, WebEx, Sametime, Envoke, Webbe, and Groove. This lack of standardization makes universal interoperable low bandwidth text and audio chat at enterprise and tactical levels nearly impossible.

Core Collaborative Tool Capabilities

- Server Component called Collaboration Gateway and developed by Trident Systems
- Client called Transverse
  - Java based. Requires Java 1.4.1 or higher. Java 5.0 recommended.
- Keyword based message monitoring with pop-up windows and audio notification
- Supports Intelligence Community XML Metadata standard for Classification Labeling

Function	Single Domain	Cross Domain	Technology/Standards Used
One-to-One Chat/IM	***Yes***	***No***	***XMPP***
Presence	***Yes***	***Yes, in CT&E now***	***XMPP***
Group Chat	***Yes***	***Yes, in CT&E now***	***XMPP, JEP-045***
Bi-Directional Language Translation	***Yes***	***Yes, in CT&E now***	***XMPP, JEP-171, & NSA's CyberTrans II***
Whiteboarding	Under Development	Under Development	XMPP, SVG, JEP-060
Low Bandwidth Audio	Under Development	Under Development	(S)RTP, Speex
Application Casting -One-to-Many App. Sharing	Under Development	Under Development	(S)RTP, JPEG, PNG
Web based Chat	Under Development	Under Development	HTML, DHTML, Javascript, HTTPS, AJAX
Multiple Domain (>2) Support	Under Development	Under Development	Multi-homed guard & cascaded

Current Client Capabilities

- Supported by USJFCOM J9. https://xmpp.je.jfcom.mil
- Open Source, uses the Apache 2.0 License
- Uses Jive Software's Smack XMPP library
- Extensive plug-in and preferences API for extending the client
- Buddy Lists
- Online users tab
  - A MUC (group chat) room that contains all users using the client that are connected to a given server.
- Places tab
  - A building->room->floor representation of rooms
- HyperRooms
  - A specialized room that contains other rooms. Allows users to monitor and participate in multiple chat rooms within a single window.
- Automated discovery of a server's available chat rooms
- Ability dock/undock windows
- User interface is themeable
- Java Web Start (JNLP) Support

Current Client Capabilities

- Language Translation using CyberTrans II
  - Supports automatic translation of inbound and outbound messages without user intervention
  - Supports manual translation of inbound and outbound messages
  - Supports language pivoting - using one language to translate between two other languages for which a direct translation does not exist.
- Full logging of all chat sessions on client. Most XMPP servers also have the ability to log chat sessions.
- Enhanced Chat Message Window that displays username, time stamp, classification, original/pivot/destination languages, digital signature and encryption notification, and room name (if in HyperRoom mode) in boxed display.
- Support for Windows, Linux, Solaris, and MacOS X
- Tested interoperability with Jive Wildfire, Jabber XCP, Coversant Soapbox XMPP servers. Other XMPP compliant servers should work as well.
- Tested interoperability with IWS's new XMPP bridge.
- Object (message) level digital signing using W3 XML Digital Signature Specifications.

Features under Testing

- Cross Domain Chat support
  - Uses Trident System's Collaboration Gateway 1.1
    - The CG was funded under a SBIR contract by AFRL Rome, NY and USJFCOM J9
  - In September 05, CDCIE Chat entered CT&E SR1-8 with the NSA at the Army's TIC at Ft. Huachuca, AZ and on November 28th we started SR-9 testing at NSA in Maryland.
    - Completed testing in May 06
    - 2-3 month regression testing period will start in July 06.
  - ***"(U) Conclusions: The results show the CDCIE is an effective cross-domain chat solution. It provides simple chat across two domains while enforcing the necessary security measures to protect the high side and itself from both malicious attacks and unauthorized disclosure. It also shows a robustness that reduces the risk of DoS attacks." - NSA CDCIE Penetration Assessment (SR-9), page 13, 13 June 2006***

Features under Development

- Enhanced Language Translation
  - Full support for JEP-0171: Language Translation over XMPP. We are the primary authors of the JEP.
- Full localization support and CJK/HA (complex language) input method support.
- Whiteboarding
  - Uses the Scalable Vector Graphics (SVG) standard from W3.org
  - Supports one-to-one and multi-user operations
  - In-band over XMPP
  - Multi-user version works in MUC mode or with a server component (preferred method)
- Ability to do a full text search on local client chat logs
- DHTML/AJAX based Web Chat for the Collaboration Gateway
  - Based on JWChat
- Audio & Application Casting (one-way sharing) support
  - Design goal is 1000 concurrent users in a single session. UDP/Unicast based, but with support for remote site repeaters (aka reflectors)
  - Using Secure Real-time Transport Protocol but integrated with client
  - Using Google developed XMPP Jingle protocol for signaling over XMPP
  - Using OpenMCU for conferencing engine

Planned Development

- Embedding a lightweight XMPP server to handle disconnected operations.
- Graphical Installer which works with and without administrator privileges.
- Adding support for additional translation engines and middleware including:
  - Mitre developed translation engine middleware. Used in their TrIM system.
  - Direct access to SYSTRANS instead of via Cybertrans
  - Babelfish (babelfish.altavista.com)
  - Google Translate (http://translate.google.com/translate_t)
- Add automated language, engine, character set discovery for Cybertrans.
- Improved online help system
- XForms integration
- Mitre Collaborative Data Objects (CDO) integration
- Scrolling marquee with OASIS CAP support

Ongoing Server Development

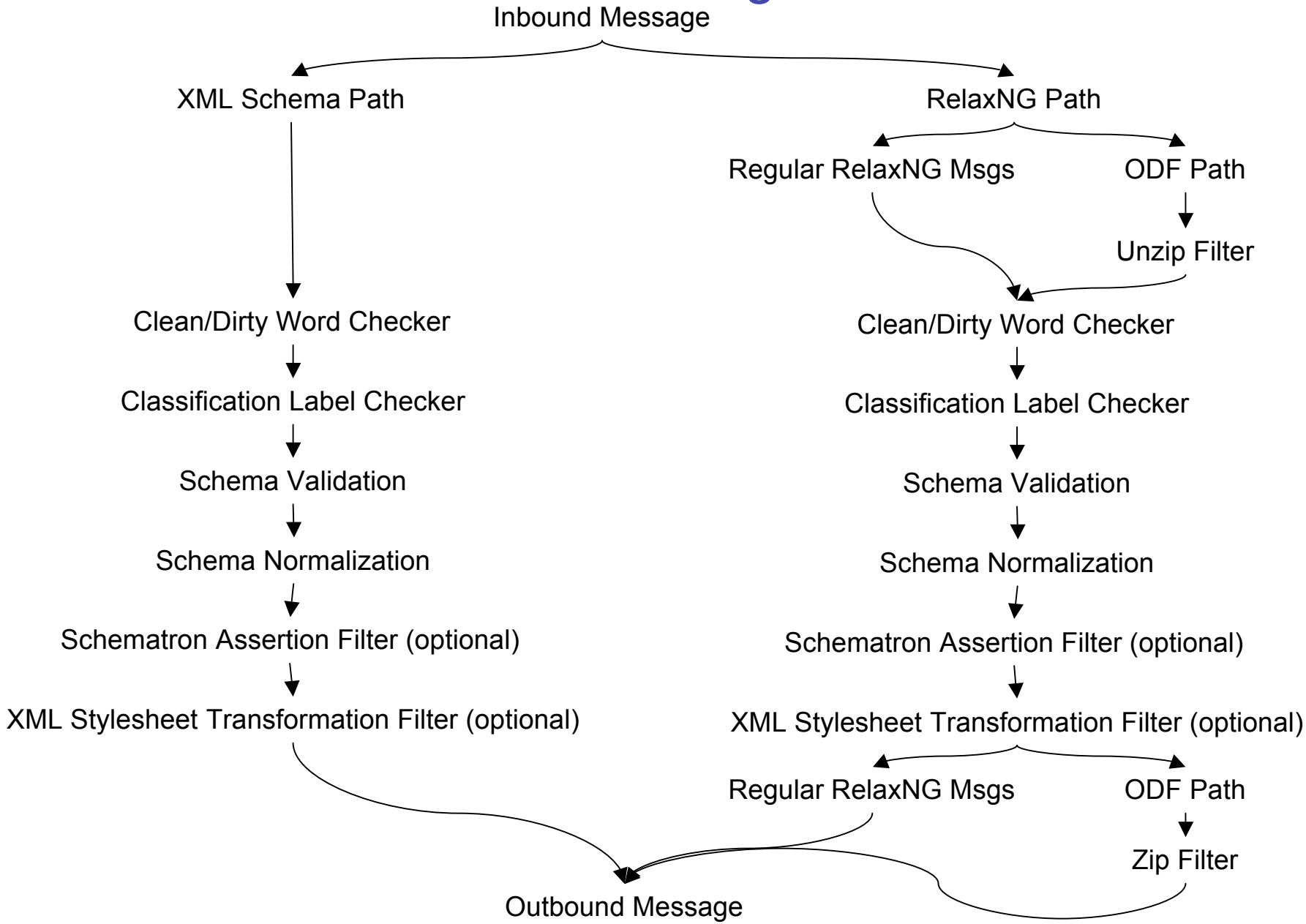
- Added JEP-033: Extended Stanza Addressing support to:
  - Jabber XCP
  - Jive Wildfire Server
- Added JEP-060: Publish & Subscribe support to Jive Wildfire Server (www.jivesoftware.org)
- Adding SRTP support and scalability improvements to OpenMCU (www.openh323.org)
- Adding Jingle support to OpenMCU and Jive Wildfire
- Adding AJAX Web Chat support to Jive Wildfire using JWChat

Data Sync Guard (DSG)

- A commercial high performance cross domain XML Guard developed by BAE Systems and funded by USJFCOM and Dept of the Army
- Runs on the XTS-400 Platform and uses STOP/OS 6.1E
- Supports TCP/IP Socket connections for fast low-latency data movement
- Data movement within guard is via shared memory. Data regrading does not involve file system access.
- Supports W3.org XML Schema Validation using Apache Xerces XML parser
- Schema changes do not require vendor interaction.
- Supports IC Metadata Standard for Information Security Markings
- Supports Clean and Dirty Word Search
- Supports normalization (identity transformation) of XML messages
- Support for Schematron, RelaxNG, and XML Stylesheet to be added in CY06
- Lower cost compared to existing GOTS guards

All Classification labels are for example only.

DSG 3.0/4.0 Message Flow

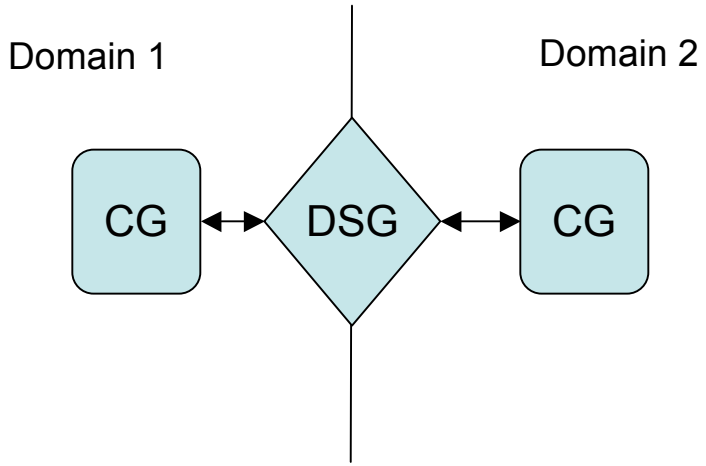


CDCIE Chat System Specifications

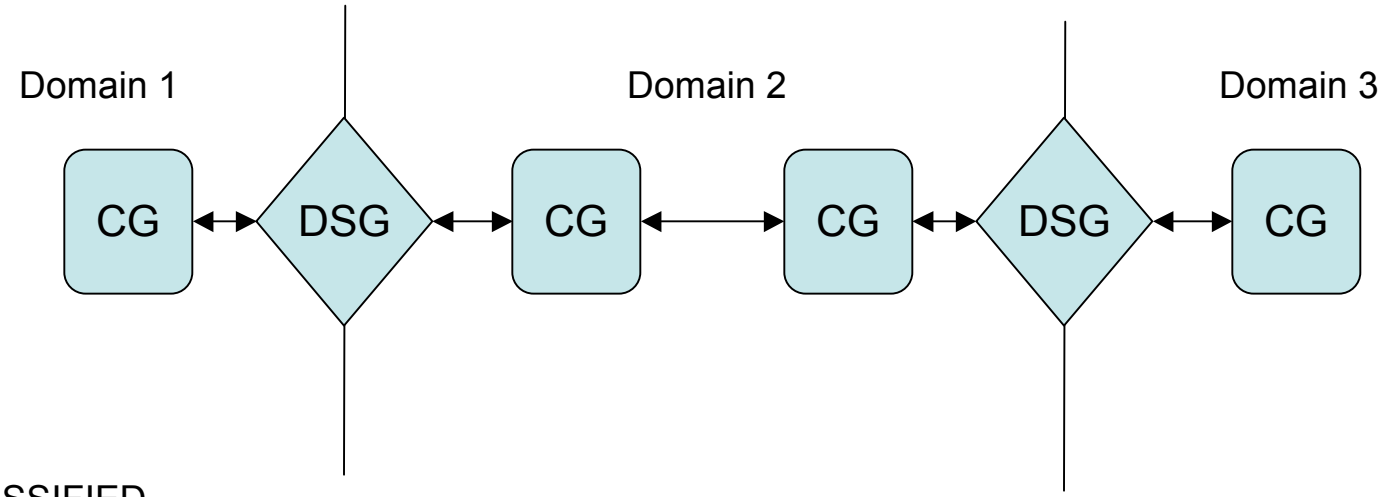
- CG Hardware/Software (one per domain):
  - Sun SunFire V20z with dual Opteron 252 CPUs with 4GB RAM.
  - 1U Rack Mount configuration
  - Runs Red Hat Enterprise Linux AS 4.1 with CAPP modifications and SE Linux enabled.
  - Collaboration Gateway 1.1 software from Trident Systems
  - Jabber XCP 4.2 SP2 - XMPP Server (CG 1.1)
  - Jive Wildfire Server (CG 2.0+)
- DSG Hardware/Software:
  - BAE Systems Custom built server based on a 2.8 Ghz Intel Xeon CPU, 1GB RAM
  - 3U Rack Mount configuration
  - EAL 5+ certified STOP/OS 6.1E
  - Has a Red Hat Linux 8 compatible API for developing applications
  - DSG 2.0 software
- Clients
  - J9's TransVerse (aka Buddyspace) Client
  - Ezenia's IWS 3.0 or 2.5.1.3 w/ Cross Domain modifications

Multi-Domain Support (1 of 2)

Current - Two Domains Only - CG 1.1

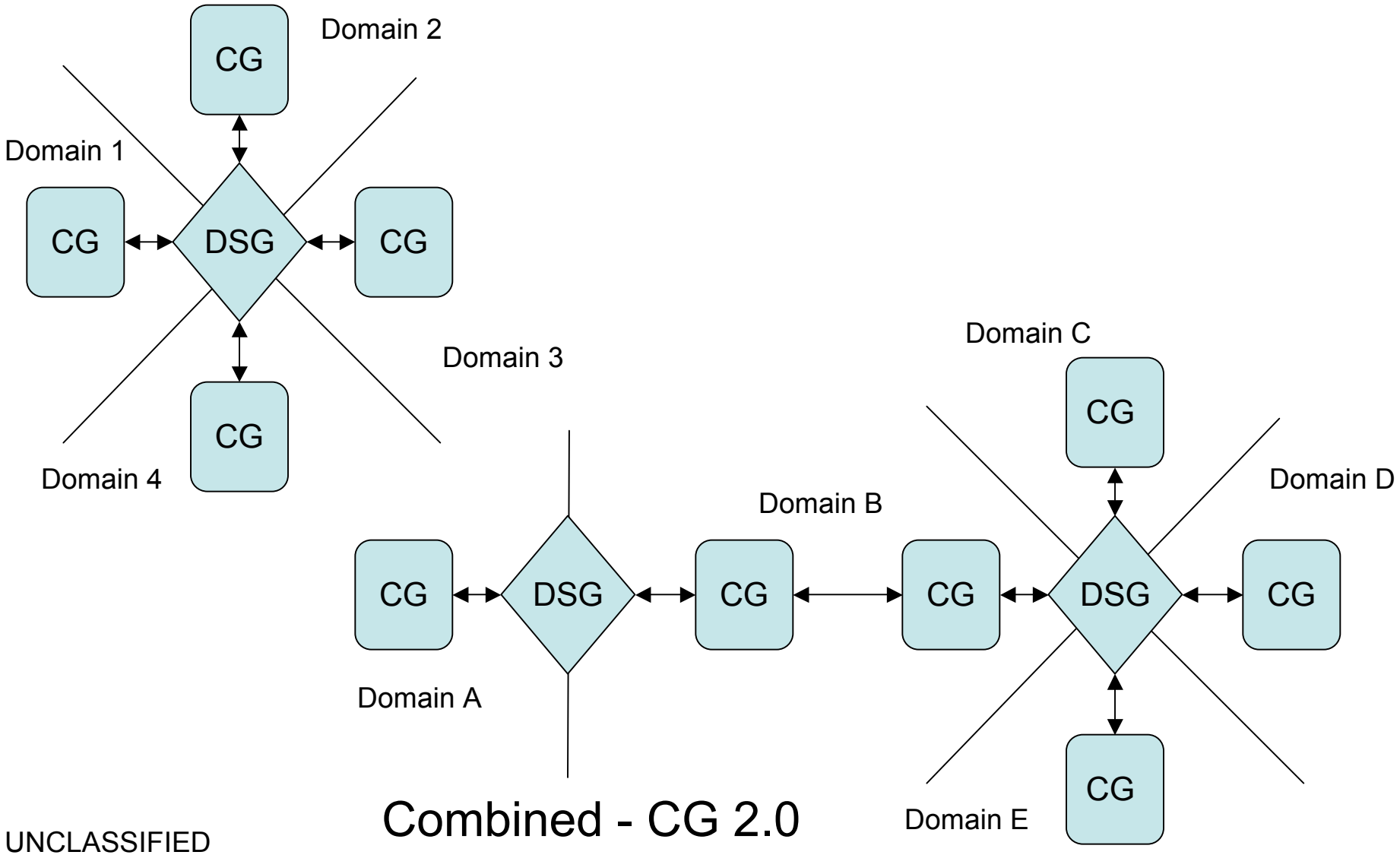


Cascaded - CG 2.0



Multi-Domain Support (2 of 2)

Multi-domain via DSG - CG 2.0

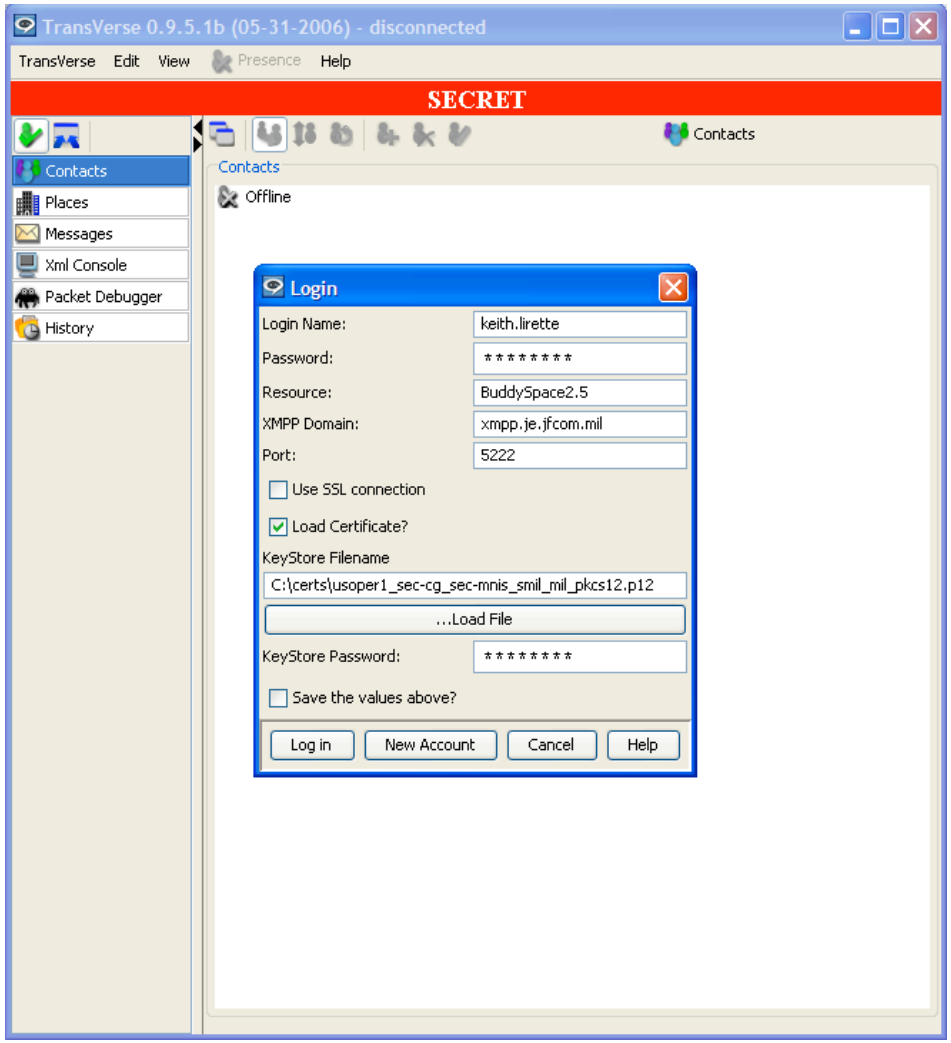


Combined - CG 2.0

Slideshow Demo

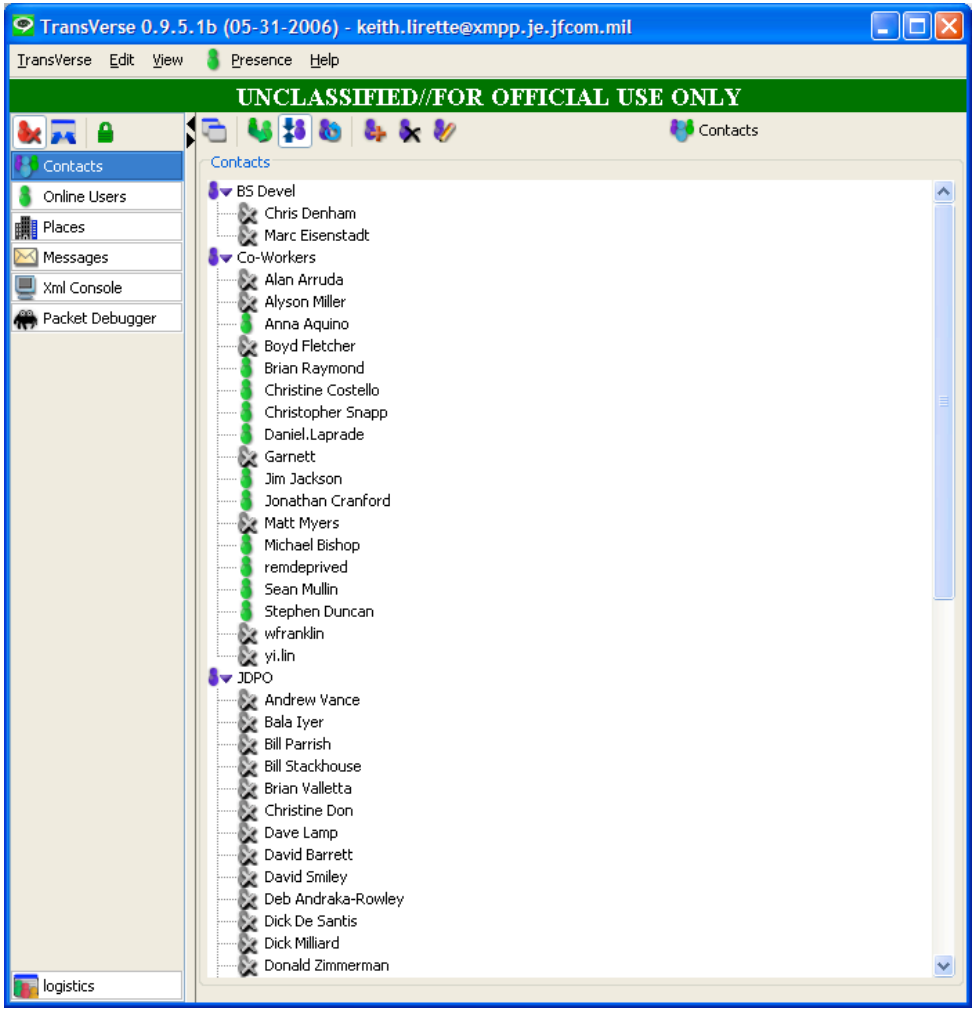
Login

- Login dialog with optional loading of certificates enabled.
- Digital Certificates are used for cross domain text chat to verify the identity of the user (non-repudiation) and message integrity.



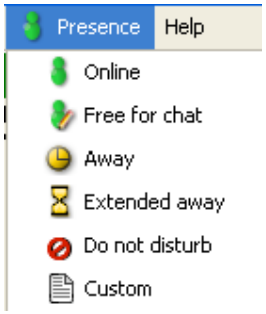
Contacts (Buddy List)

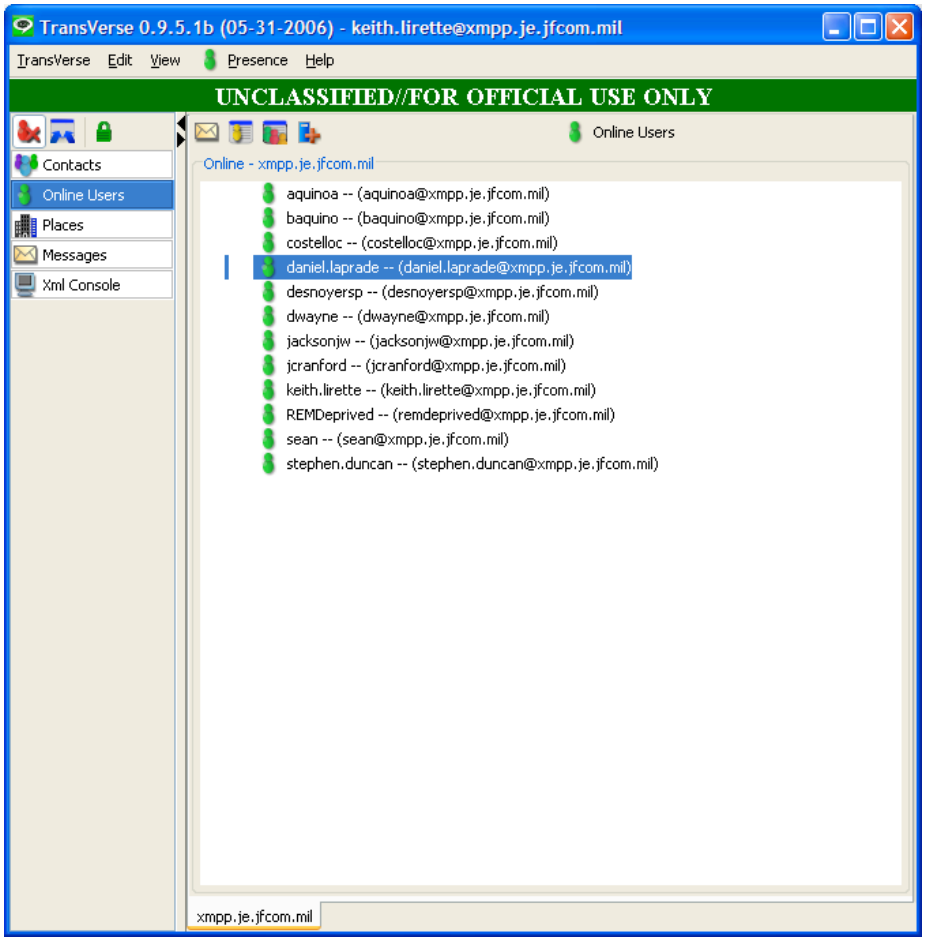
- Contacts lets you manage your chat buddies.
- Contacts shows the online status (presence) of your buddies.
- Buddies are XMPP users whom you have subscribed to their presence.



Online Users

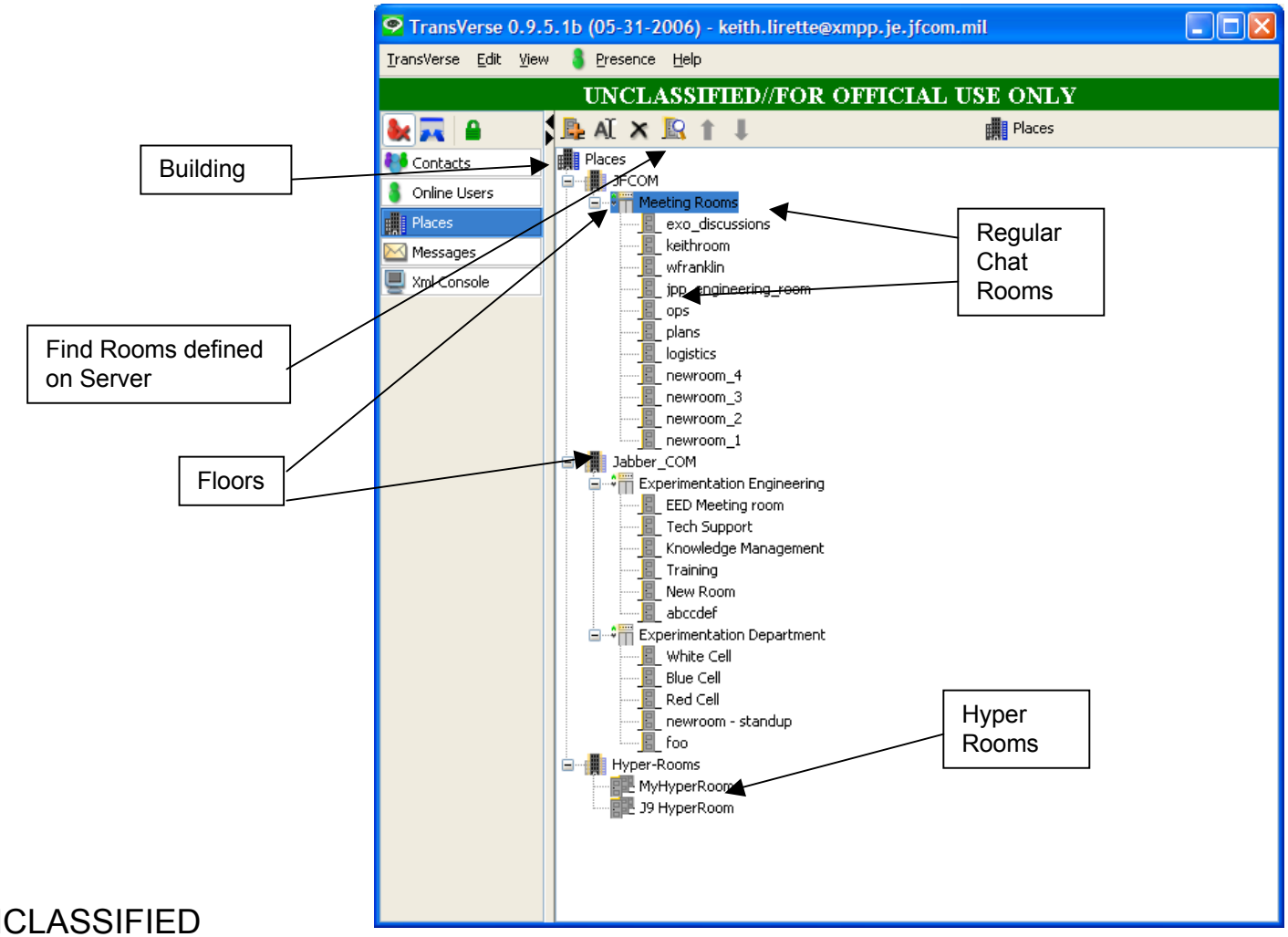
- Online Users shows the presence of all users logged into a XMPP server.
- You can connect to multiple servers' to get their "Online Users"





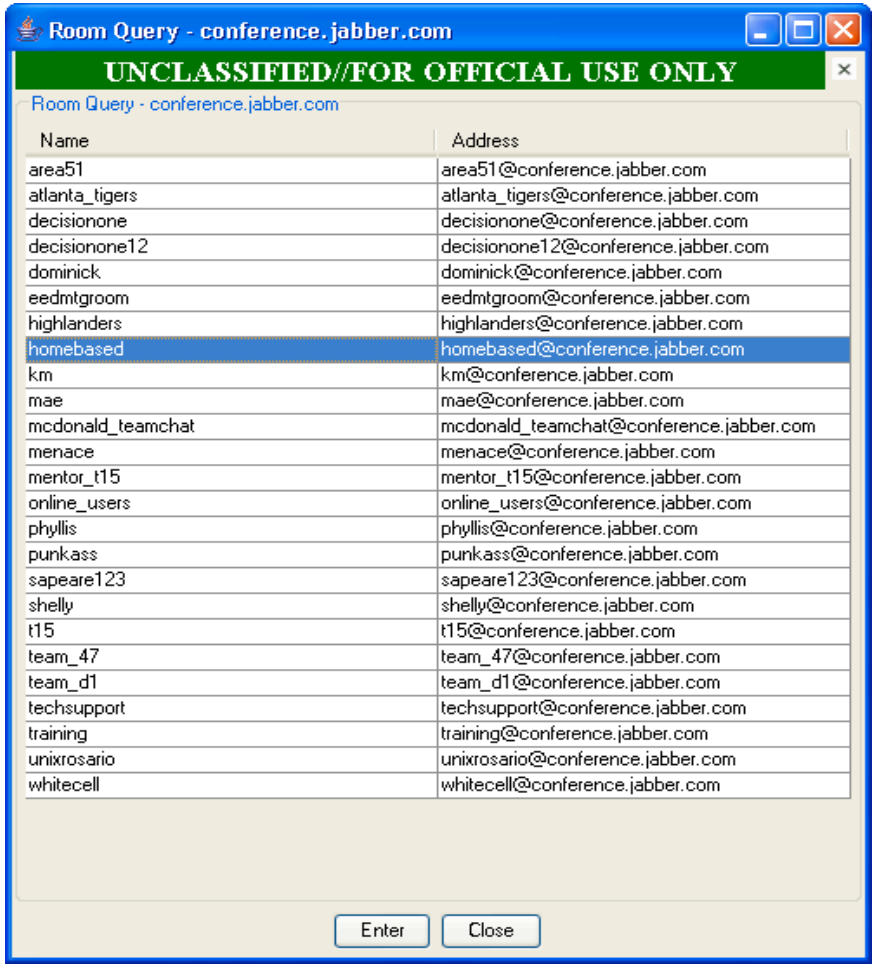
Places

Places tab provides a logical grouping of rooms using “Building, Floor, Room” analogy.



Find Rooms

- Allows users to find all Multi-User Chat rooms defined on a server.
- Users can join a found room or drag it onto a floor in the Places tree.



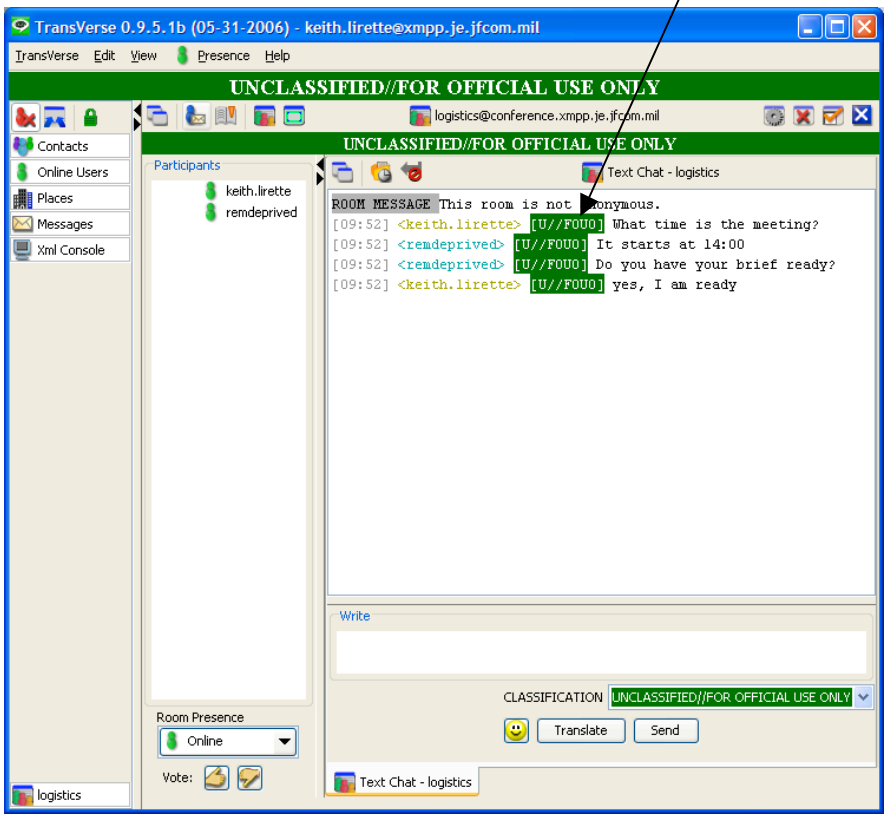
All Classification labels are for example only.

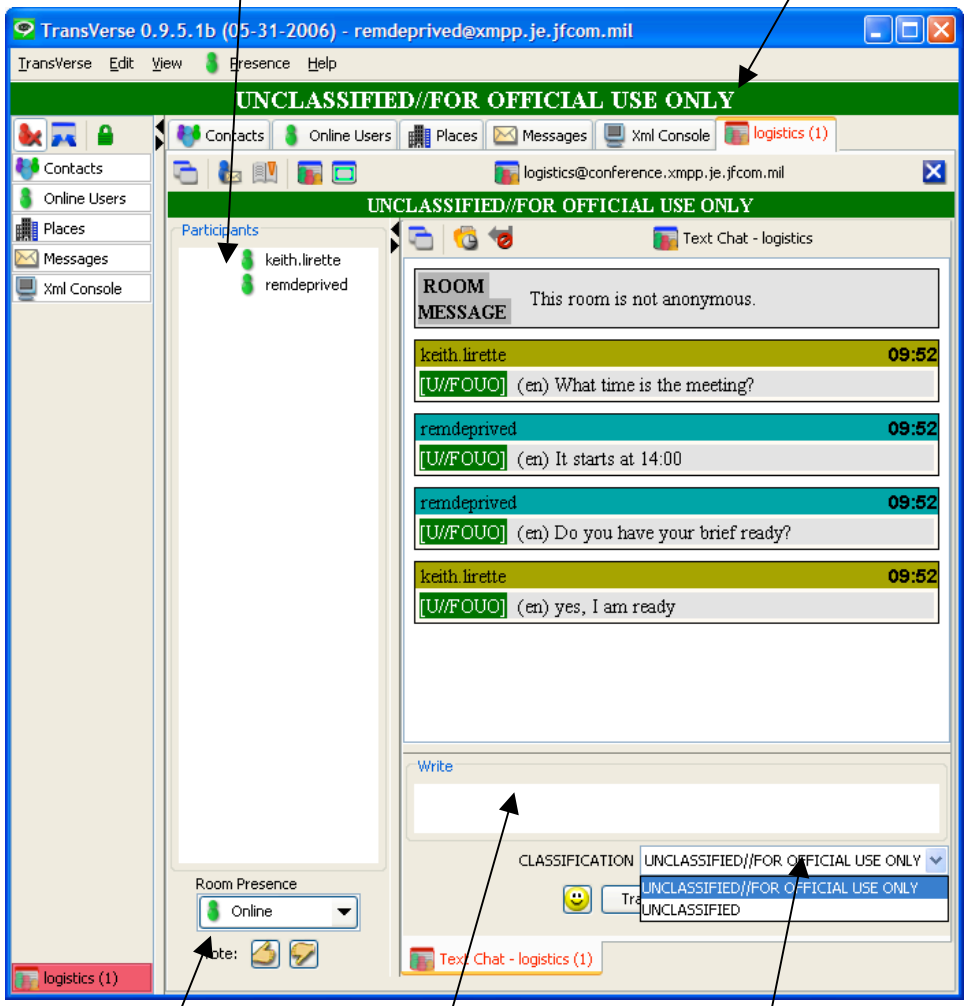
Group Chat Screens

Each message received has its own classification label.

Users in this room

Highest classification of the client





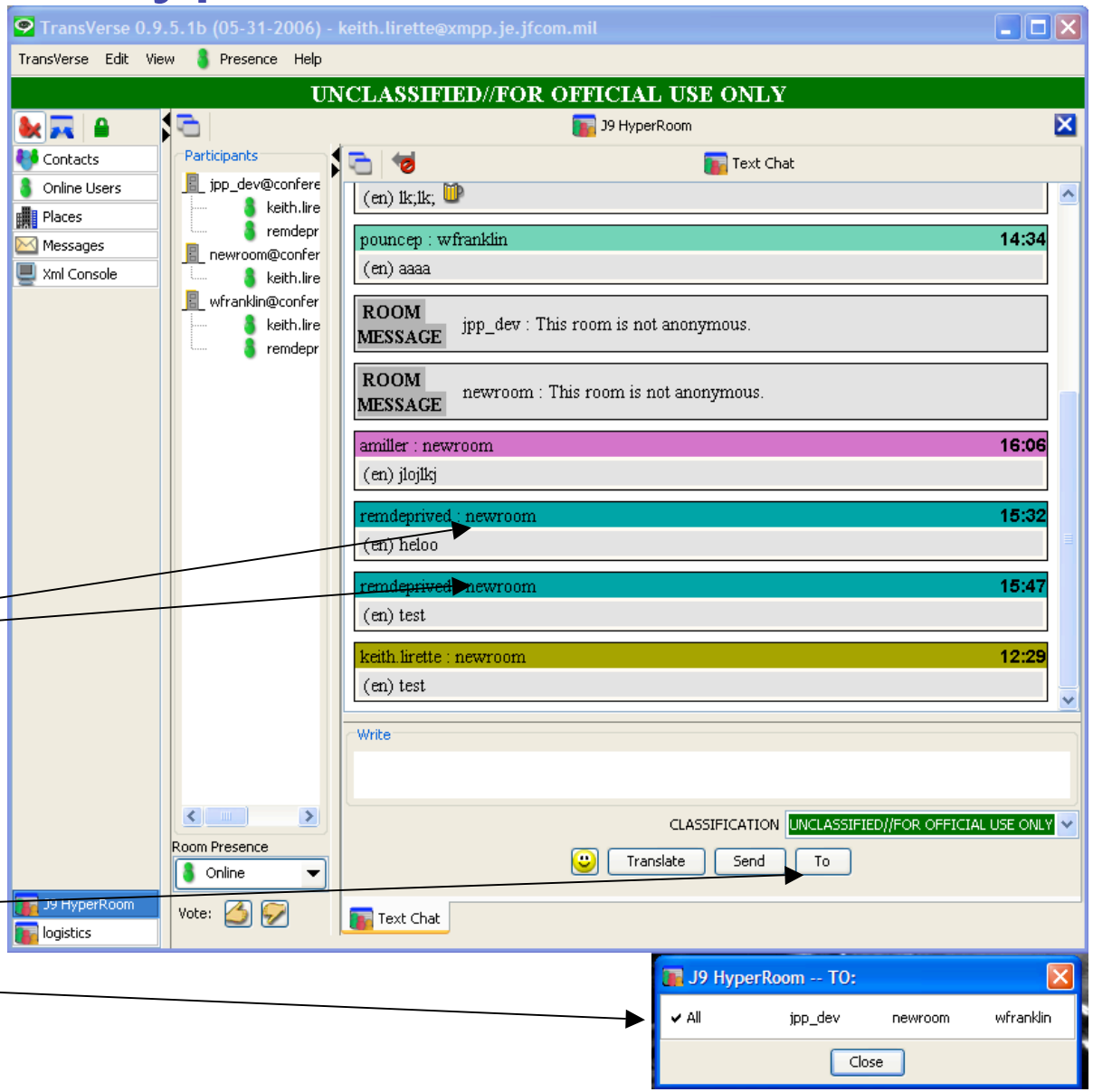
Presence control for room

Text input area

Classifications allowed for a specific room

HyperRooms

HyperRooms allows the user to send and receive messages to/from multiple chat rooms at the same time in the same window.

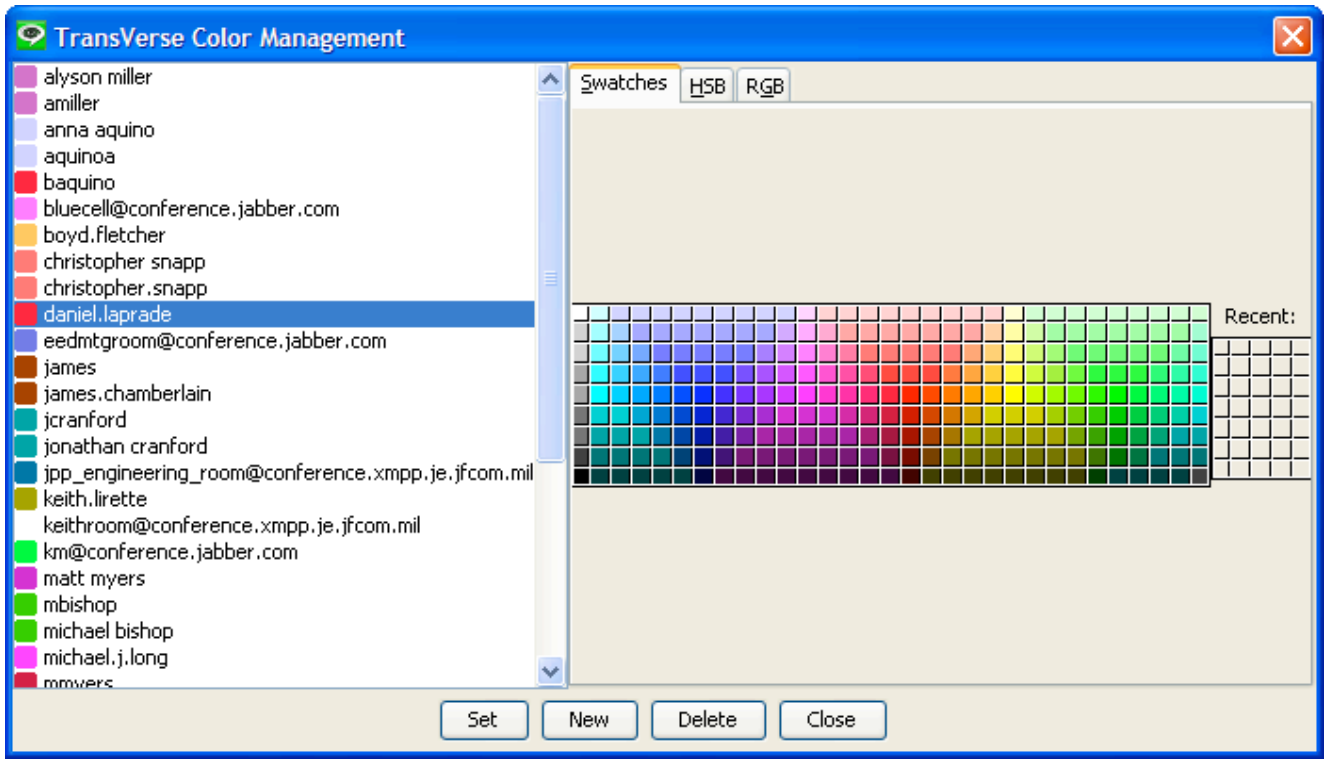


For each message, the chat room name is displayed

You can select to which room(s) you want to send the message by pressing the “To” Button.

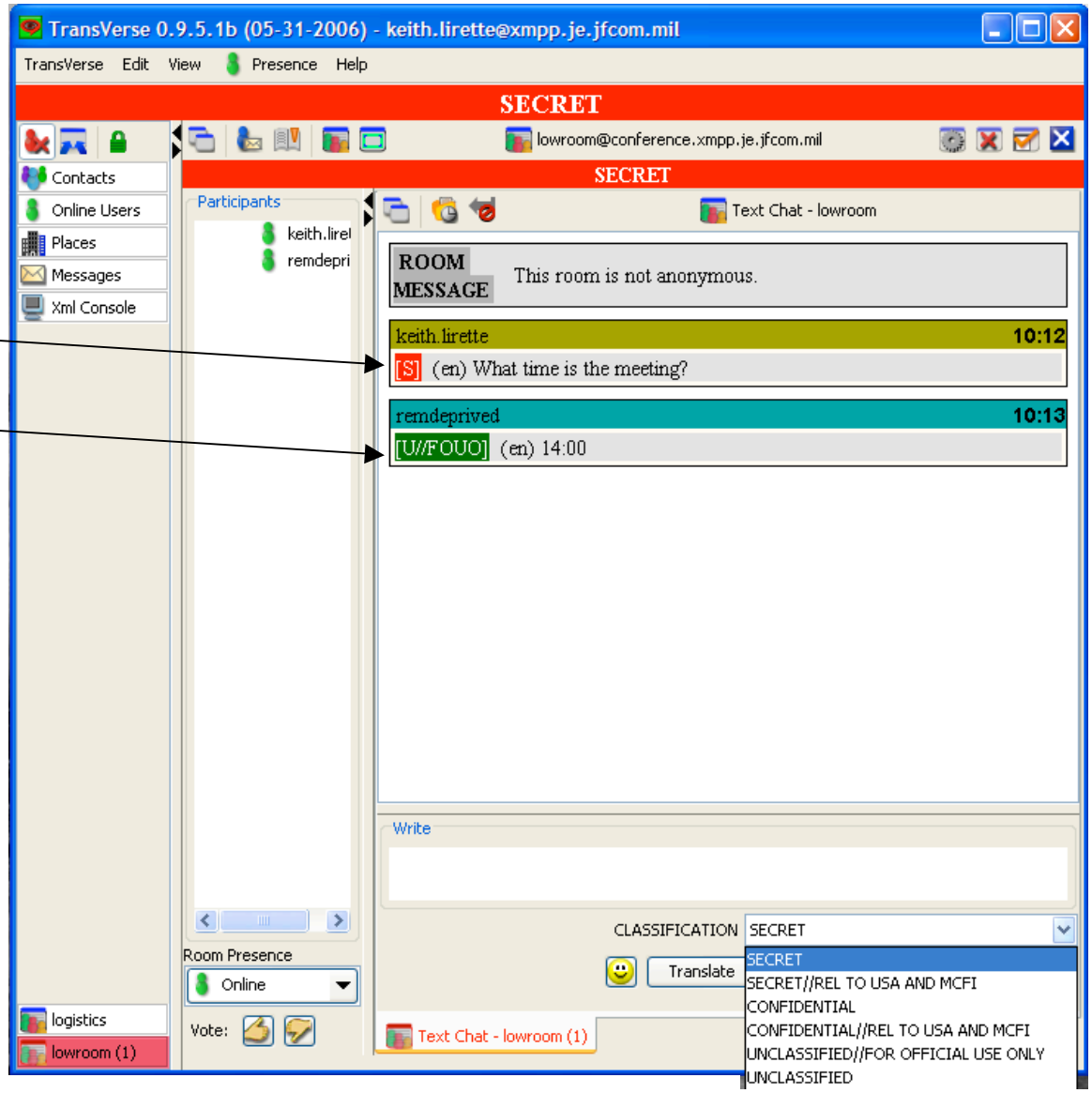
Color Assignment

Allows the user to assign colors to messages from specific users or chat rooms.



Cross Domain Chat

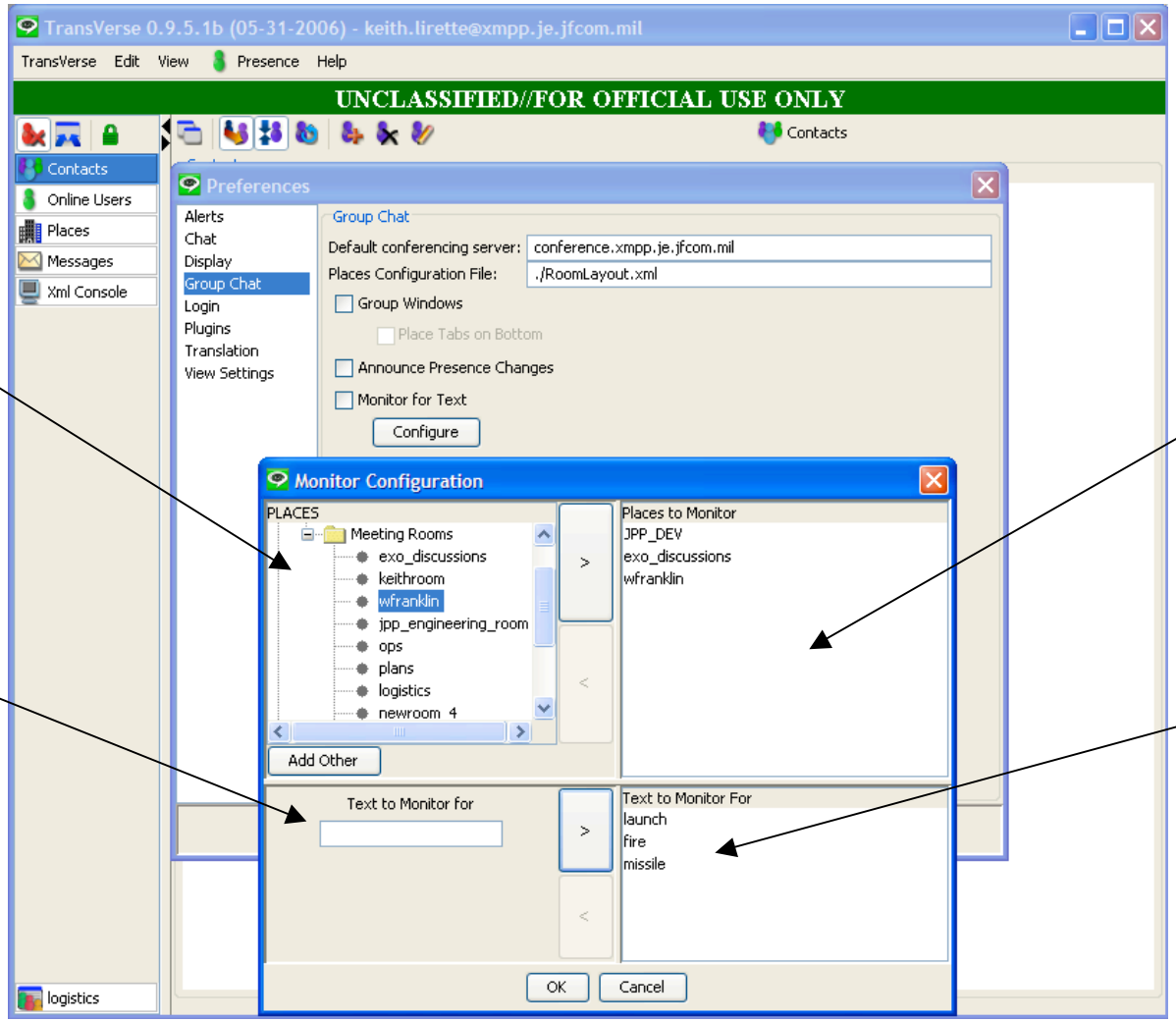
Messages with different classification labels.



Configuring Message Monitoring

Listing of available rooms to be monitored

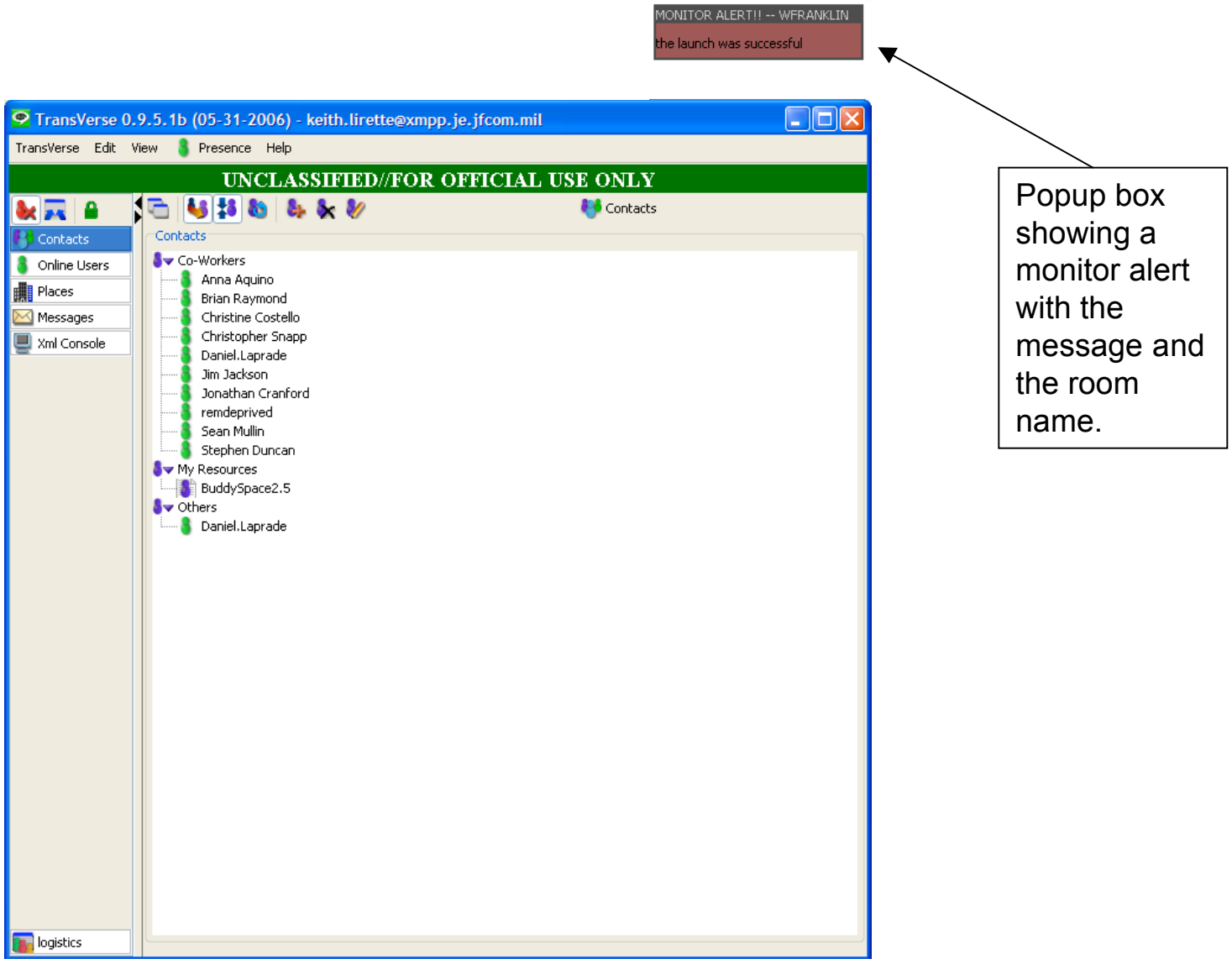
Input area for new text to be monitored



Shows which rooms you are monitoring

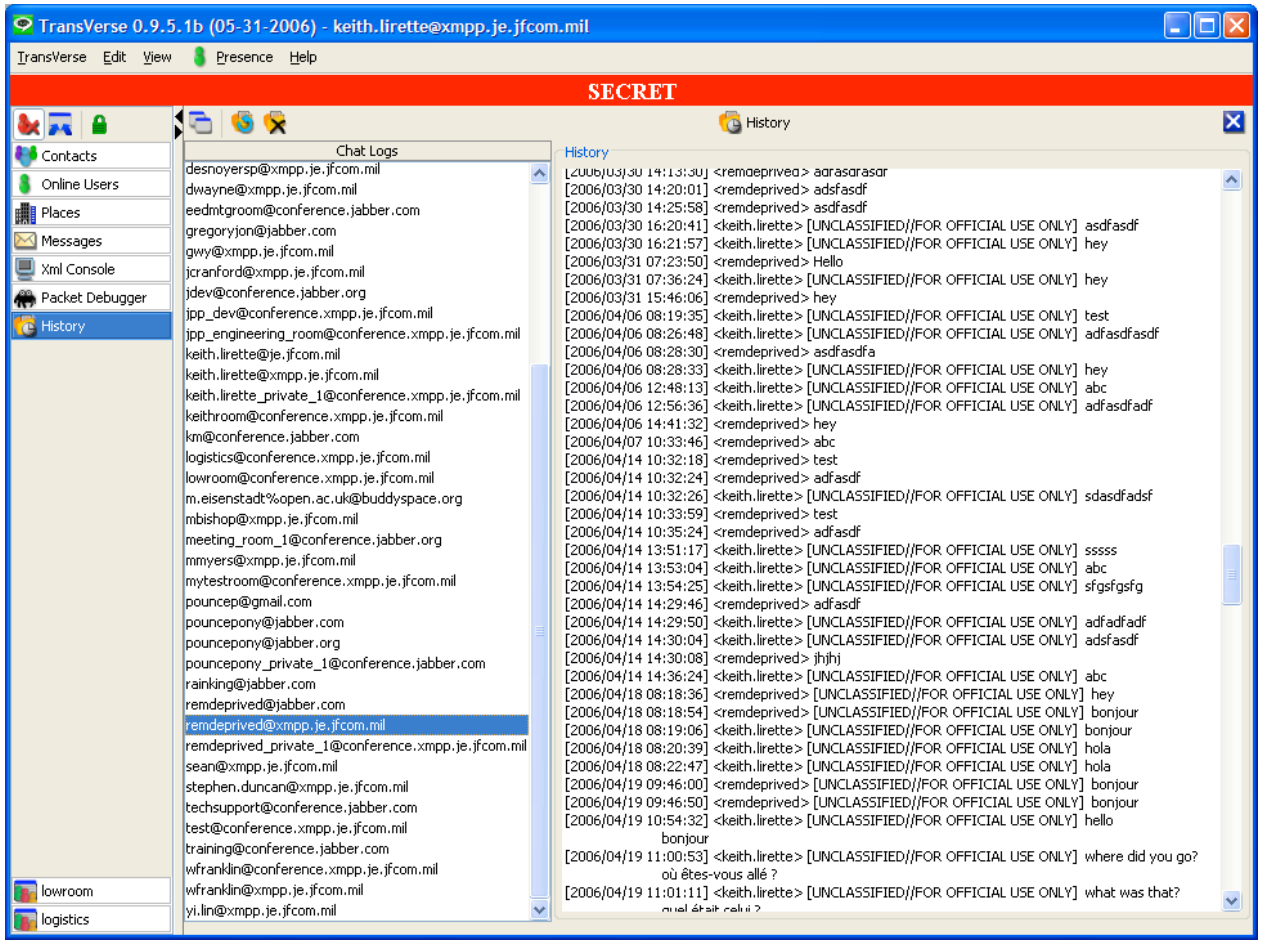
Shows the text that is being monitored

Example of a Monitor Alert



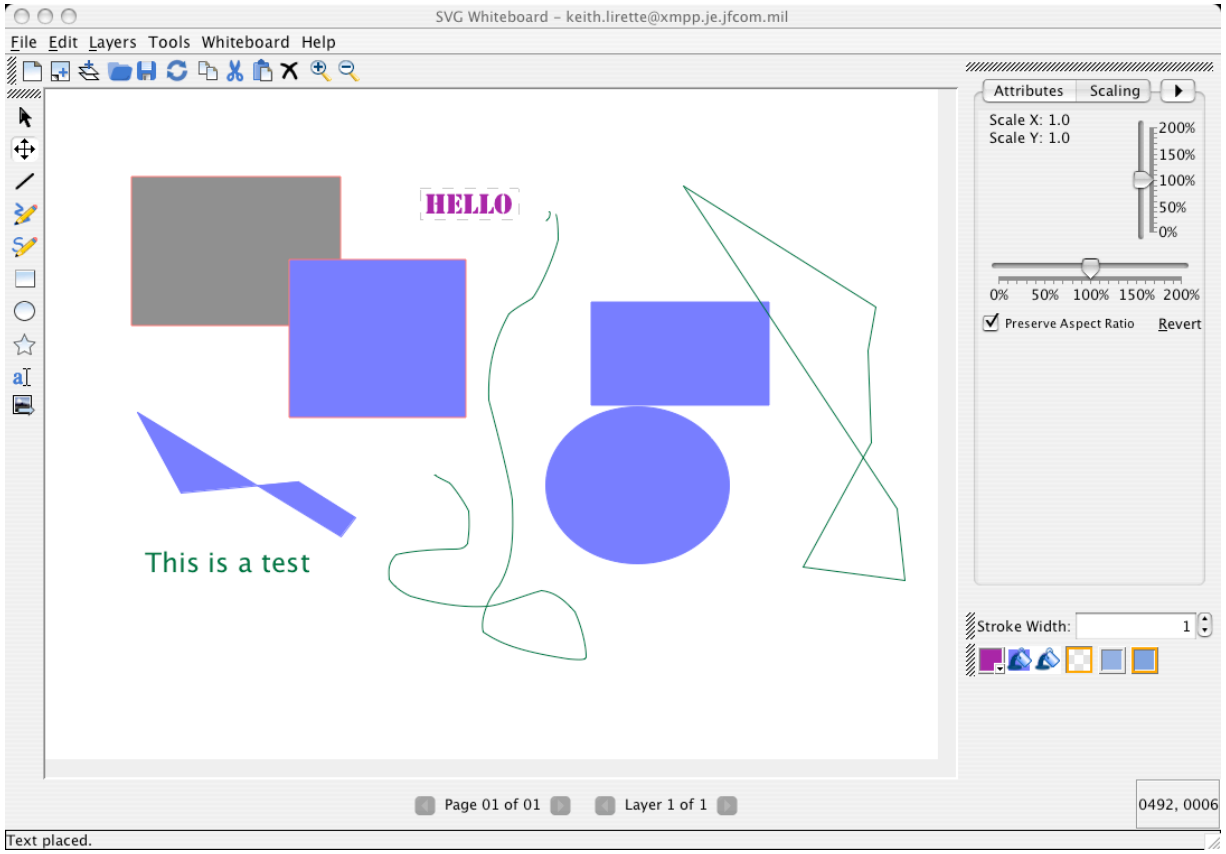
History

Provides a mechanism to view your chat logs.



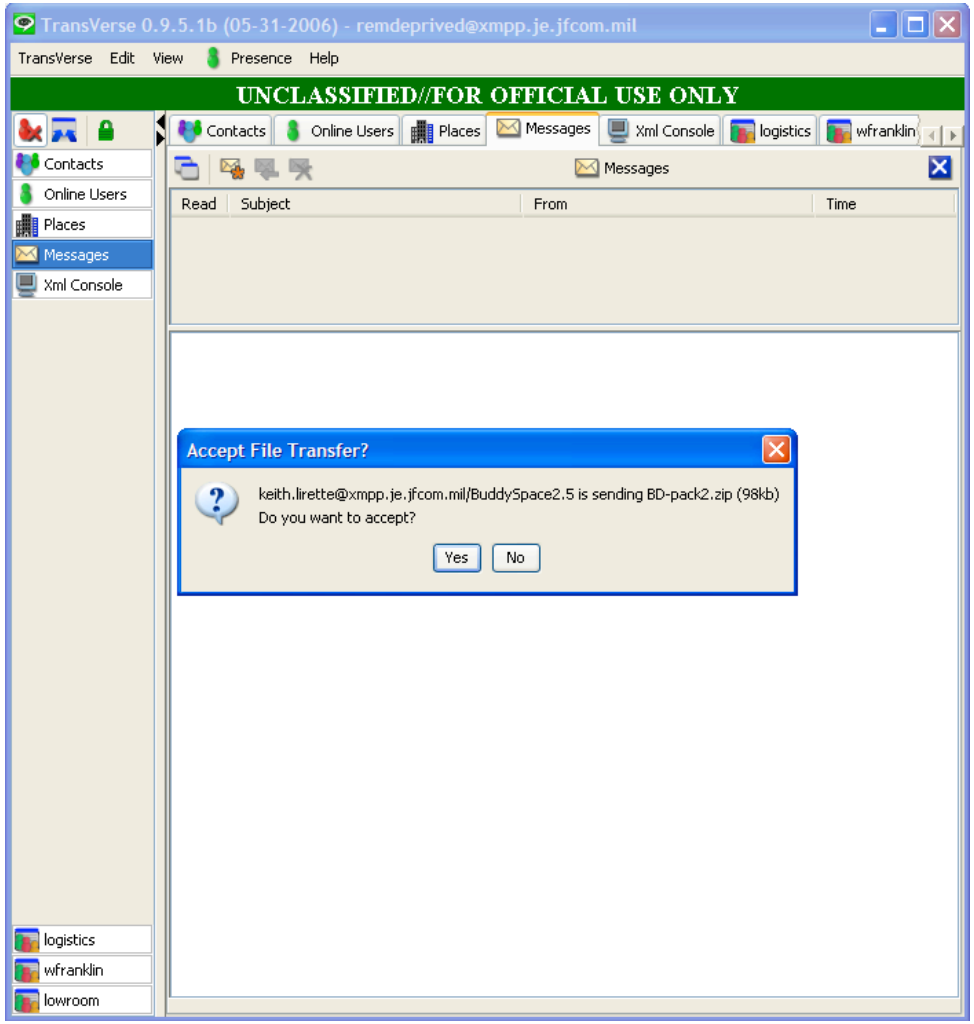
Whiteboarding

- Java based and uses Apache Batik as SVG Engine
- We are developing a JEP to specify how to use XMPP as a transport for distributed multi-user SVG whiteboards

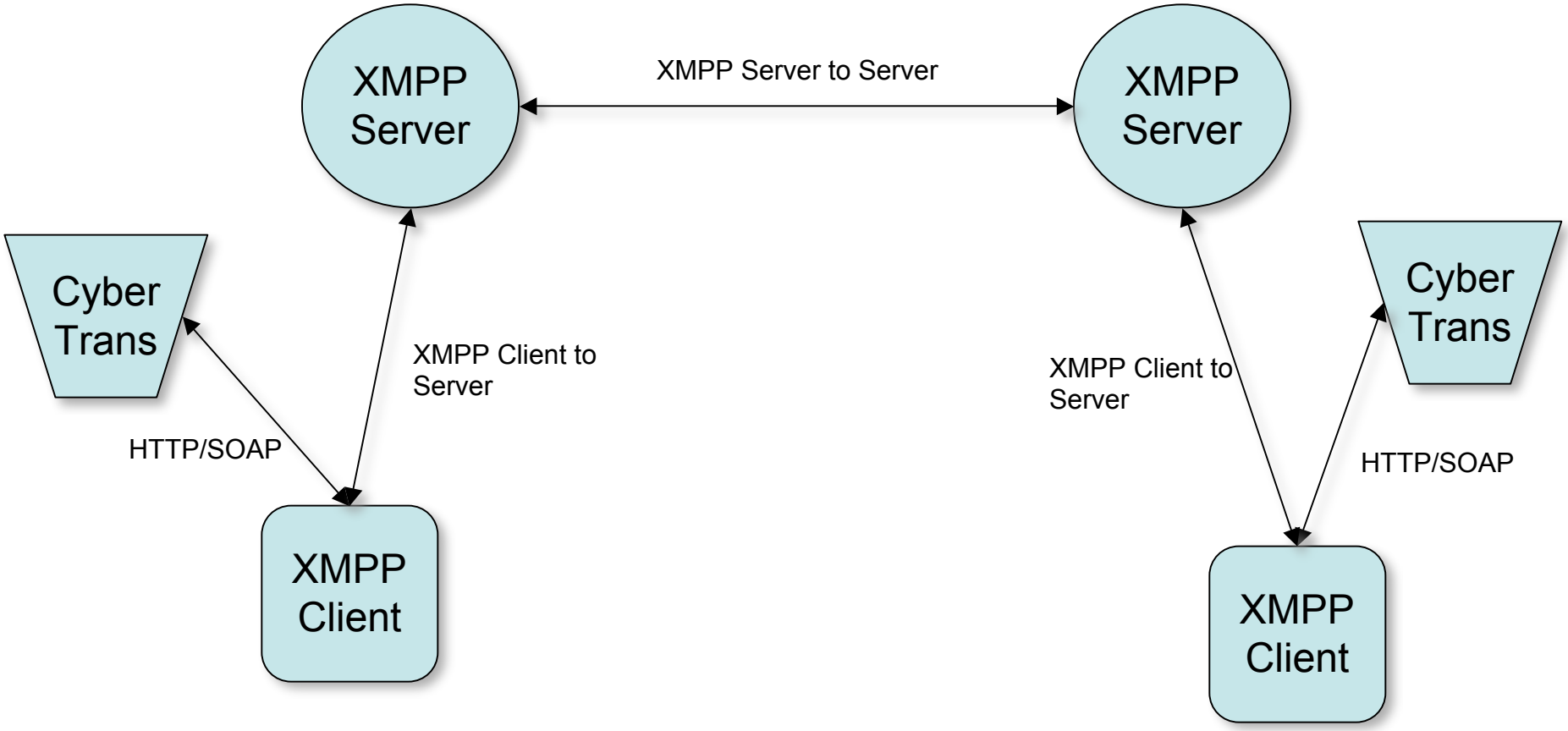


File Transfer

- File transfer is now supported in chat mode (for any file type) and whiteboarding (for images only)
- Implements JEP-0096: File Transfer
- Normally the client's virus scanning software will virus check the file while it is being written to disk.



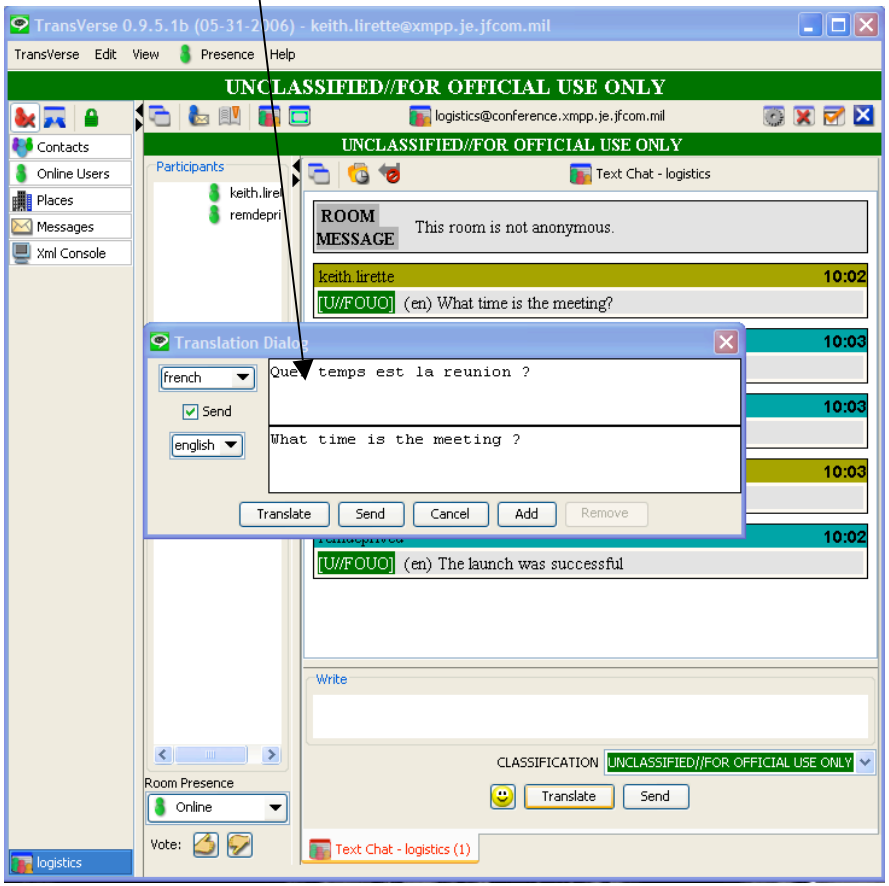
Translation Architecture

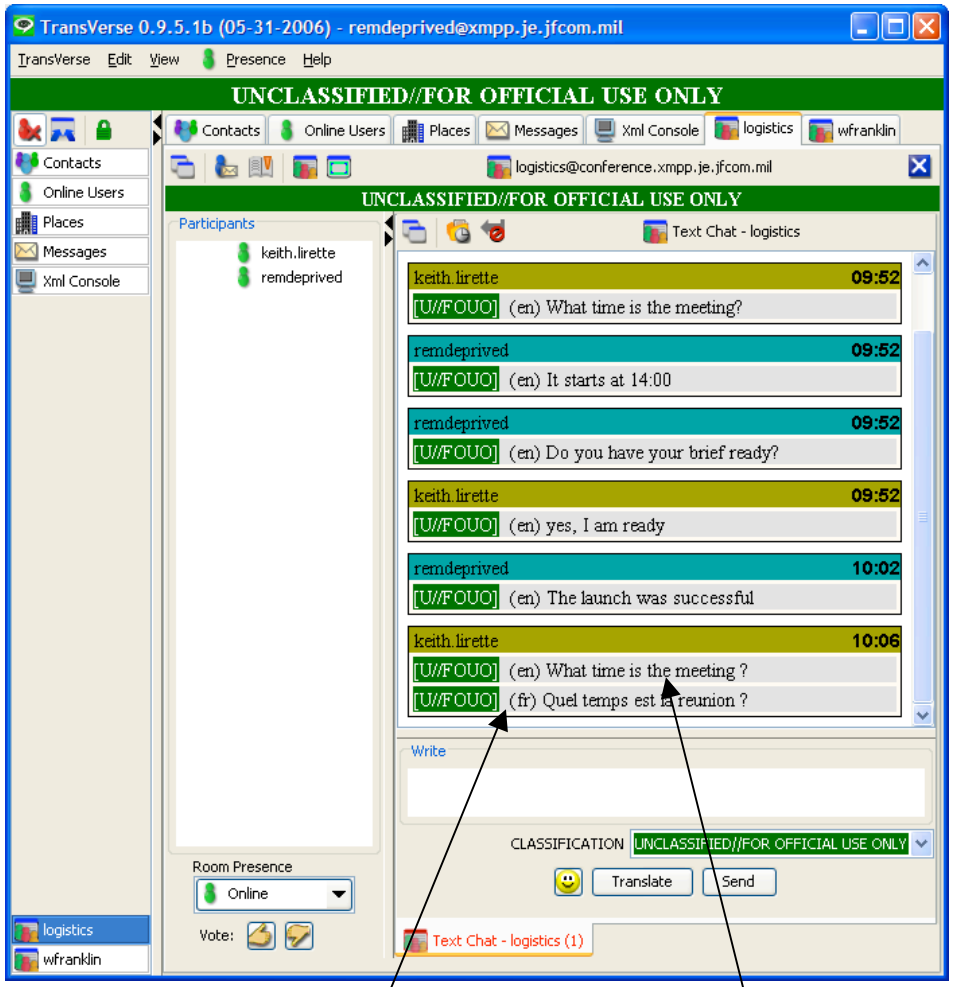


Translation can be manual or automatic on outbound messages and automatic for inbound messages.

Manual Translation

Manual text translation popup dialog. Uses CyberTrans middleware to interact with the the translation engine. Can translate to all supported languages in one popup. Not Needed if automatic outbound translation is used.



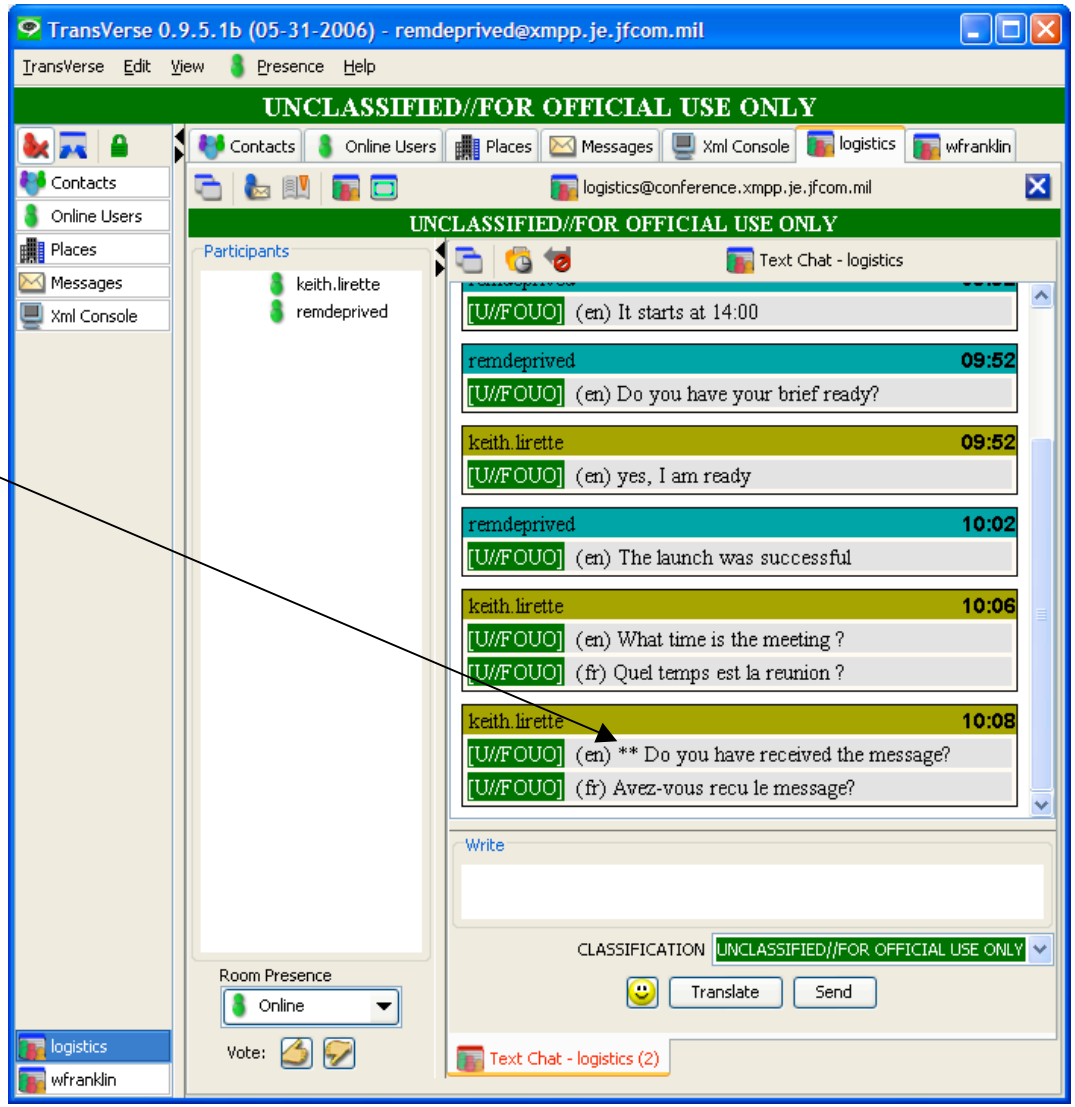


Original Text

Translated Text

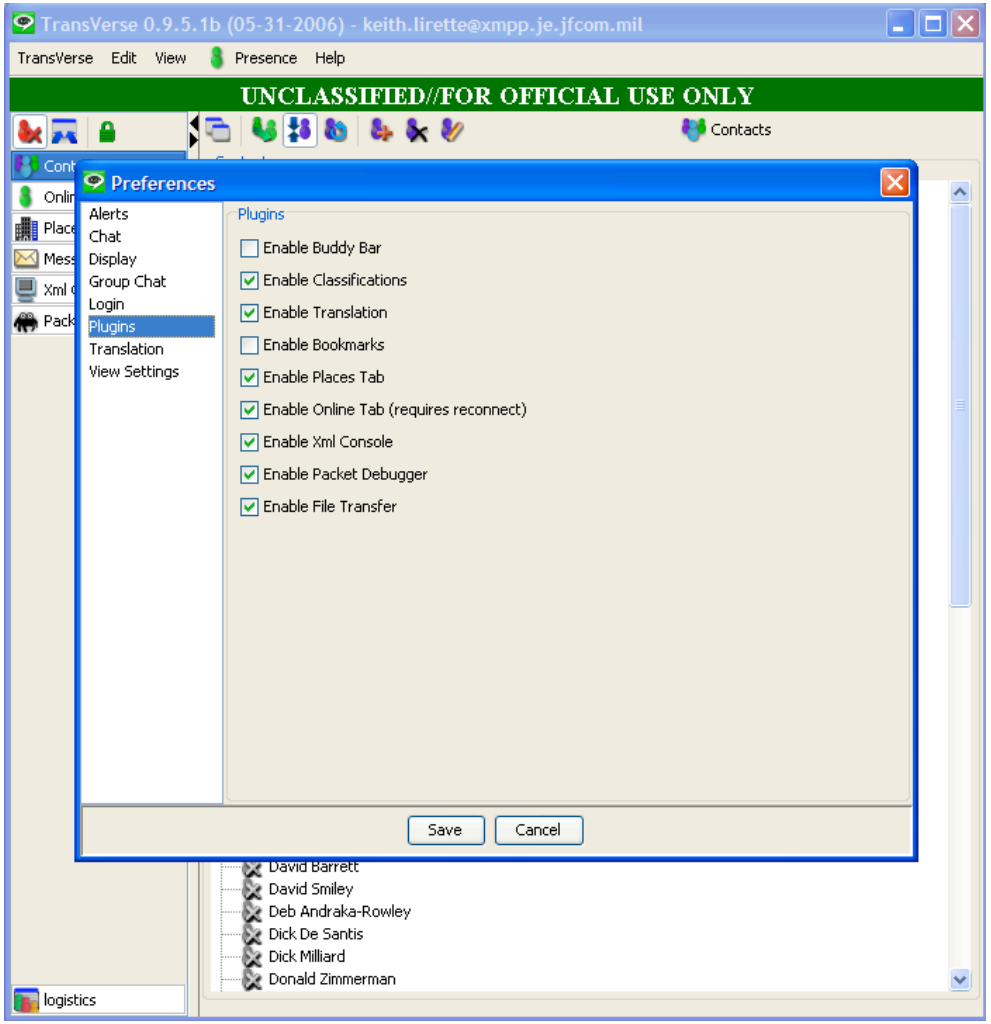
Automated Translation

** signifies that the inbound message was automatically translated by this client



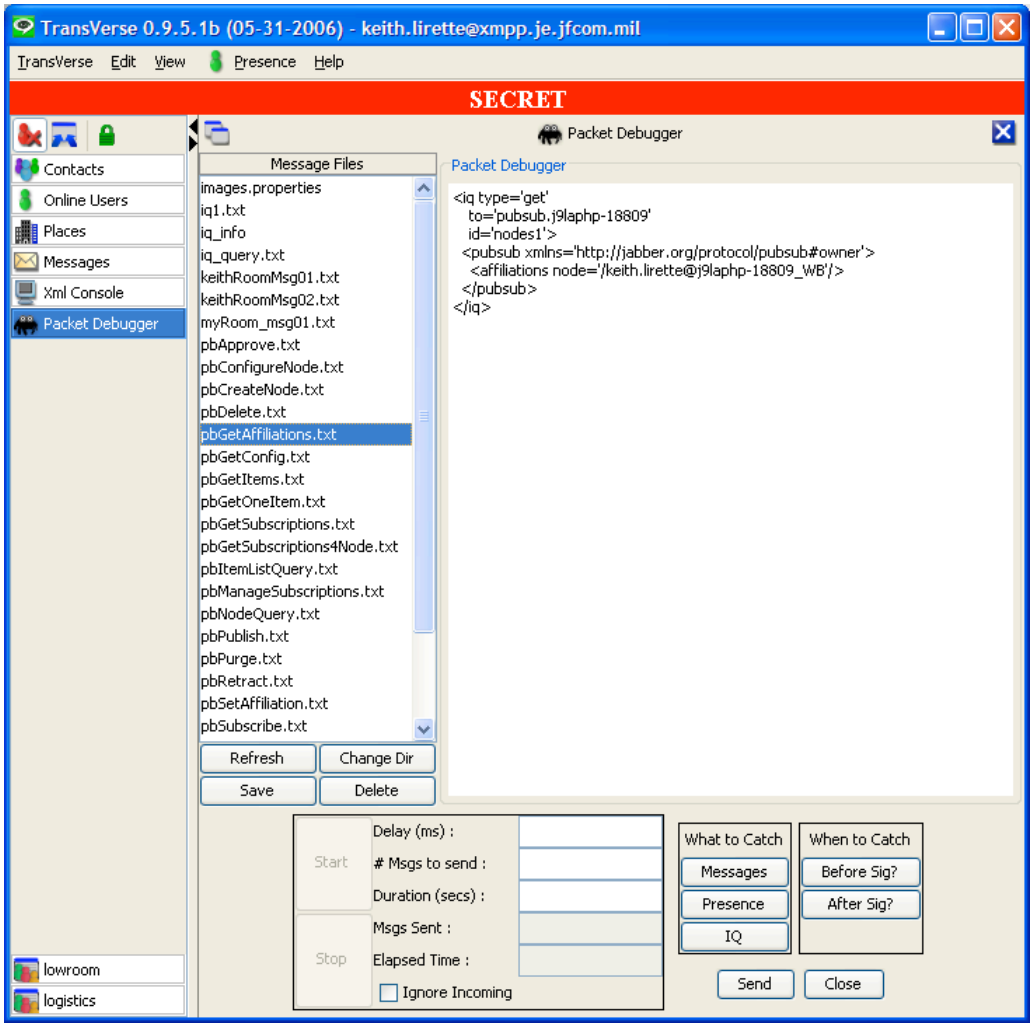
Plug-ins

- TransVerse now supports a flexible plug-in architecture for adding additional capabilities to client
- In this screenshot, you can see a number of plug-ins that we provide.



Packet Debugger

- In addition to providing an XML debugger (called XML Console) for watching all traffic going to/from the client, Transverse also includes a Packet Debugger that lets skilled users directly manipulate the transmission of XMPP packets
- This tool is frequently used for performance and compliance testing.



Web Services Gateway (WSG) Overview

WSG Overview

- The Web Service Gateway (WSG) provides an open standards based solution for the bi-directional cross domain transfer of data using SOAP based web services.
- Uses push model
- The WSG message flow can operate in two modes: Human Review (HR) and Automatic Transfer (AT).
- A WSDL document is provided to assist developers in building a web service to connect to WSG
- Graphical User Interface for System Administration
- Web based interface for Human Review of Messages and Message Transfer Status Checking.
- Uses DataSyncGuard from BAE Systems as the cross domain separation device.

Message Inspection Functions

- ***Antivirus Filter***
  - Scans the file for viruses using the ClamAV antivirus engine
- ***Classification Label Verification Filter***
  - Verifies that classification labels contained in the document are allowed for the destination domain
- ***UTF-8 Clean/Dirty Word Filter***
  - Checks the document to see if the file contain any words that are on the dirty word list
- ***XML Normalization Filter***
  - Normalizes file before passing it to the next stage in the pipeline
- ***XML Schema Validation Filter***
  - Verifies that the document complies with the schema

WSG Server Details

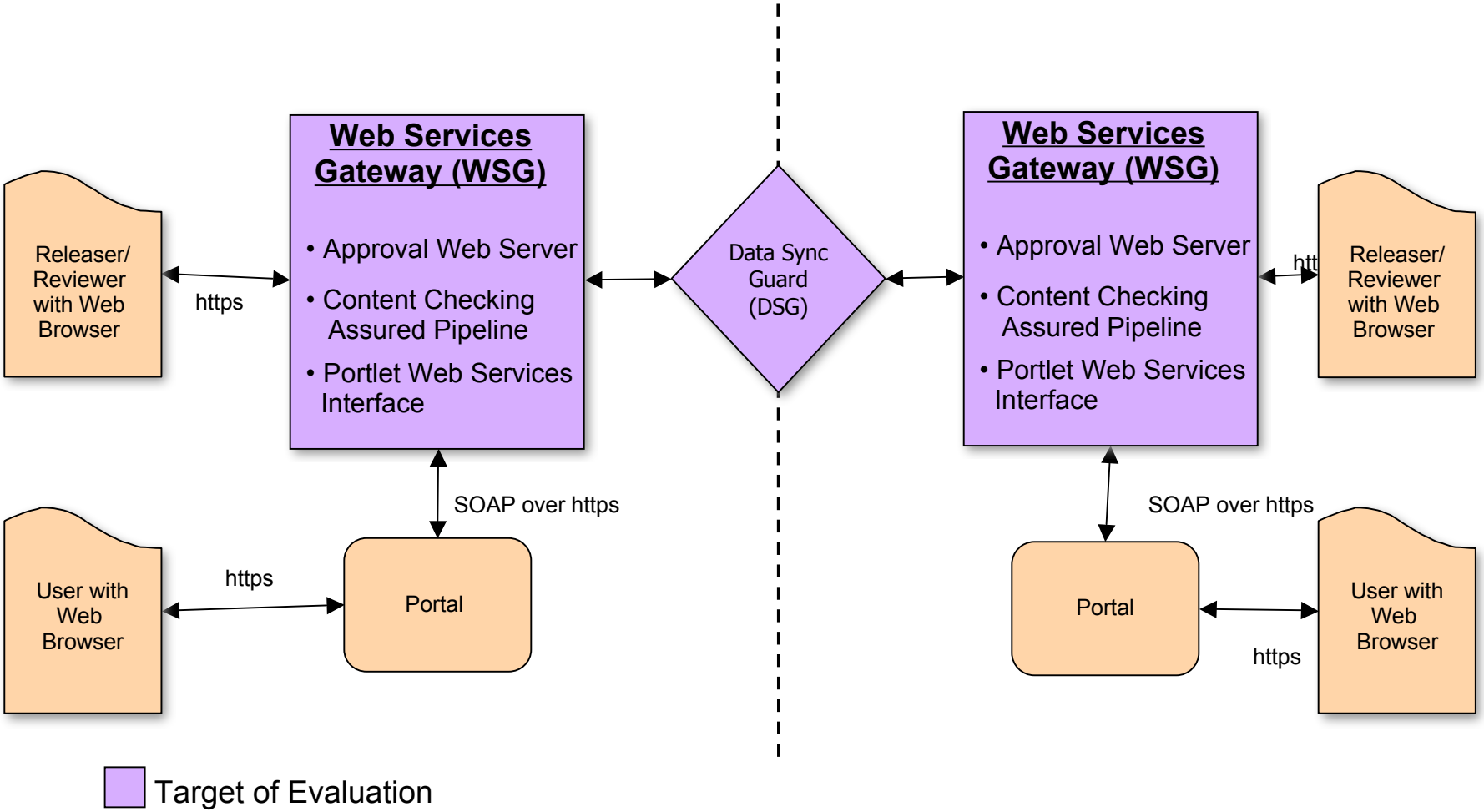
- Operating System is Red Hat Enterprise Linux 4.2 with CAPP additions and SE Linux enabled.
- Uses System V Message Queues for assured pipeline communications
- Has Central Logging Daemon for securely consolidating event and security logs

All Classification labels are for example only.

High

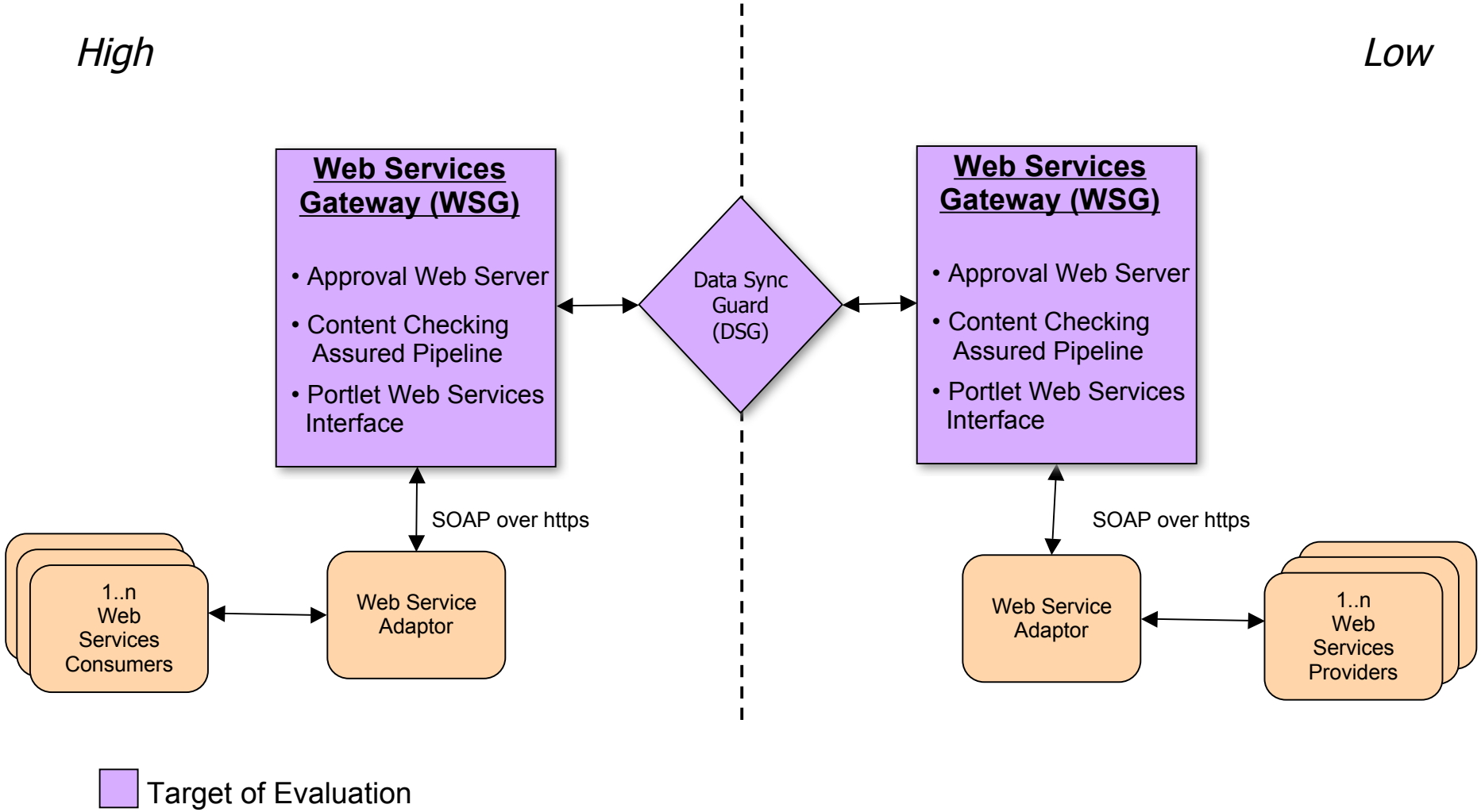
Portal Based Web Services Example

Low



All Classification labels are for example only.

Generic Web Services Example



Message Approval Web Interface (MAWI): Approval List

All Classification labels are for example only.

MAWI: Message Review

SIMULATED UNCLASSIFIED SIMULATED

Message Approval Web Interface

Id:	402870820c8c2e15010c8c2e85e30001	Last Updated:	07-20-2006 09:44
Action:	SAVE	Notes:	
Destination:	notepad	Received:	07-20-2006 09:44
Message Id:	0a1e41b0d56111daa94d0800200c9a66	Status:	received
Message Type:	wsg	Version:	0

Back

Content:

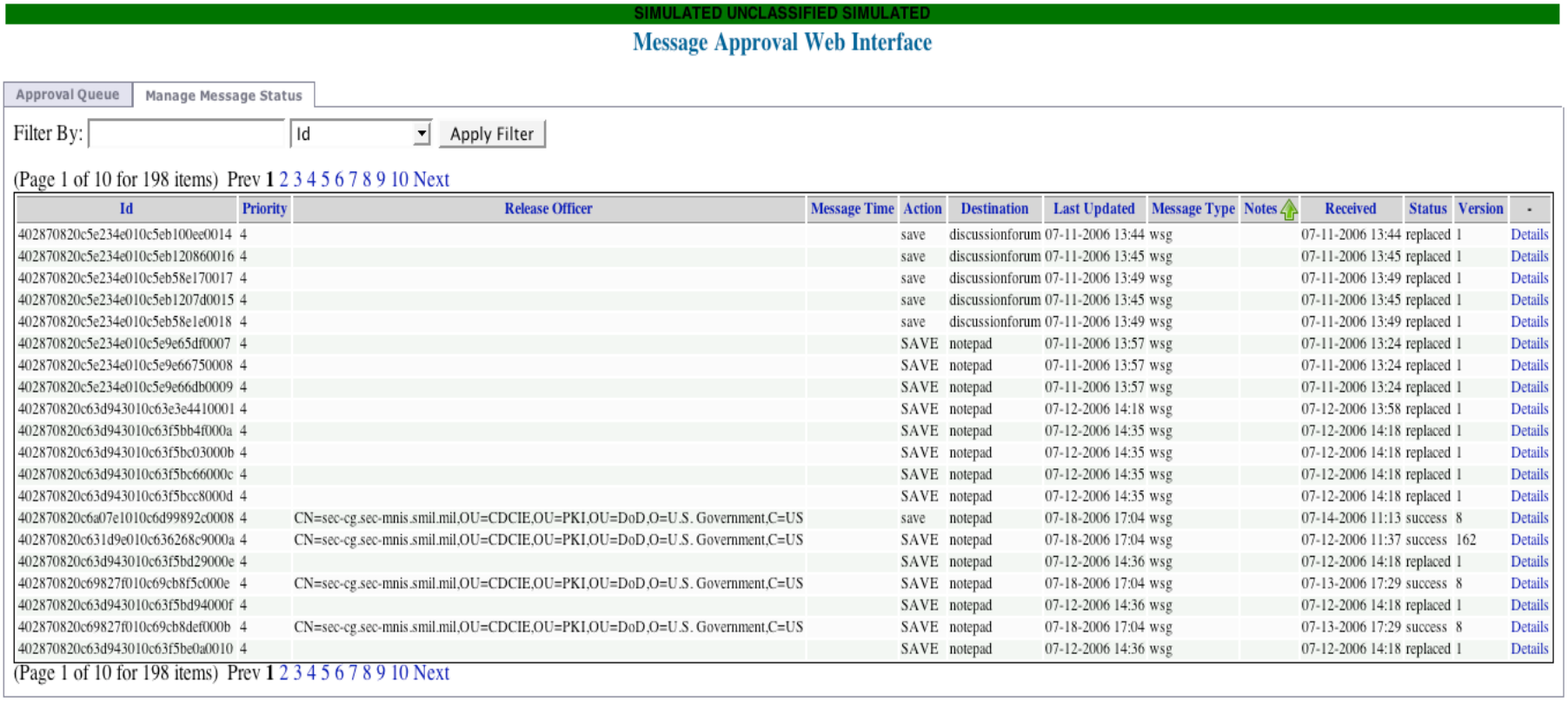
Collection UNCLASSIFIED

ID:	0a1e41b0d56111daa94d0800200c9a66
Title:	Very important notepad collection
Admin Role:	kmadmin
Member Role:	user
Private:	false
Created Date:	2006JUN21
Created By:	ID: 0a1e41b0d56111daa94d0800200c9a66 First Name: Joe Last Name: Tester Email: joe.tester@je.jfcom.mil
Note:	UNCLASSIFIED
ID:	0a1e41b0d56111daa94d0800200c9a66
Title:	Test title
Content:	
Changed Date:	2006JUN21
Changed By:	ID: 0a1e41b0d56111daa94d0800200c9a66 First Name: Joe Last Name: Tester Email: joe.tester@je.jfcom.mil
Created Date:	2006JUN21
Created By:	ID: 0a1e41b0d56111daa94d0800200c9a66 First Name: Joe Last Name: Tester Email: joe.tester@je.jfcom.mil

Comments:

Approve Reject Back

MAWI: Message Status List



SIMULATED UNCLASSIFIED SIMULATED

Message Approval Web Interface

Approval Queue | Manage Message Status

Filter By: Id Apply Filter

(Page 1 of 10 for 198 items) Prev 1 2 3 4 5 6 7 8 9 10 Next

Id	Priority	Release Officer	Message Time	Action	Destination	Last Updated	Message Type	Notes	Received	Status	Version	-
402870820c5e234e010c5eb100ee0014	4			save	discussionforum	07-11-2006 13:44	wsg		07-11-2006 13:44	replaced	1	Details
402870820c5e234e010c5eb120860016	4			save	discussionforum	07-11-2006 13:45	wsg		07-11-2006 13:45	replaced	1	Details
402870820c5e234e010c5eb58e170017	4			save	discussionforum	07-11-2006 13:49	wsg		07-11-2006 13:49	replaced	1	Details
402870820c5e234e010c5eb1207d0015	4			save	discussionforum	07-11-2006 13:45	wsg		07-11-2006 13:45	replaced	1	Details
402870820c5e234e010c5eb58e1e0018	4			save	discussionforum	07-11-2006 13:49	wsg		07-11-2006 13:49	replaced	1	Details
402870820c5e234e010c5e9e65df0007	4			SAVE	notepad	07-11-2006 13:57	wsg		07-11-2006 13:24	replaced	1	Details
402870820c5e234e010c5e9e66750008	4			SAVE	notepad	07-11-2006 13:57	wsg		07-11-2006 13:24	replaced	1	Details
402870820c5e234e010c5e9e66db0009	4			SAVE	notepad	07-11-2006 13:57	wsg		07-11-2006 13:24	replaced	1	Details
402870820c63d943010c63e3e4410001	4			SAVE	notepad	07-12-2006 14:18	wsg		07-12-2006 13:58	replaced	1	Details
402870820c63d943010c63f5bb4f000a	4			SAVE	notepad	07-12-2006 14:35	wsg		07-12-2006 14:18	replaced	1	Details
402870820c63d943010c63f5bc03000b	4			SAVE	notepad	07-12-2006 14:35	wsg		07-12-2006 14:18	replaced	1	Details
402870820c63d943010c63f5bc66000c	4			SAVE	notepad	07-12-2006 14:35	wsg		07-12-2006 14:18	replaced	1	Details
402870820c63d943010c63f5bcc8000d	4			SAVE	notepad	07-12-2006 14:35	wsg		07-12-2006 14:18	replaced	1	Details
402870820c6a07e1010c6d99892c0008	4	CN=sec-cg.sec-mnis.smil.mil,OU=CDCIE,OU=PKI,OU=DoD,O=U.S. Government,C=US		save	notepad	07-18-2006 17:04	wsg		07-14-2006 11:13	success	8	Details
402870820c631d9e010c636268c9000a	4	CN=sec-cg.sec-mnis.smil.mil,OU=CDCIE,OU=PKI,OU=DoD,O=U.S. Government,C=US		SAVE	notepad	07-18-2006 17:04	wsg		07-12-2006 11:37	success	162	Details
402870820c63d943010c63f5bd29000e	4			SAVE	notepad	07-12-2006 14:36	wsg		07-12-2006 14:18	replaced	1	Details
402870820c69827f010c69cb8f5c000e	4	CN=sec-cg.sec-mnis.smil.mil,OU=CDCIE,OU=PKI,OU=DoD,O=U.S. Government,C=US		SAVE	notepad	07-18-2006 17:04	wsg		07-13-2006 17:29	success	8	Details
402870820c63d943010c63f5bd94000f	4			SAVE	notepad	07-12-2006 14:36	wsg		07-12-2006 14:18	replaced	1	Details
402870820c69827f010c69cb8def000b	4	CN=sec-cg.sec-mnis.smil.mil,OU=CDCIE,OU=PKI,OU=DoD,O=U.S. Government,C=US		SAVE	notepad	07-18-2006 17:04	wsg		07-13-2006 17:29	success	8	Details
402870820c63d943010c63f5be0a0010	4			SAVE	notepad	07-12-2006 14:36	wsg		07-12-2006 14:18	replaced	1	Details

(Page 1 of 10 for 198 items) Prev 1 2 3 4 5 6 7 8 9 10 Next

MAWI: Message Details

SIMULATED UNCLASSIFIED SIMULATED

Message Approval Web Interface

Id:	402870820c5e234e010c5eb100ee0014	Message Id:	402870860c5e2aa6010c5e2d67140008
Priority:	4	Message Type:	wsg
Release Officer:		Last Updated:	07-11-2006 13:44
Author:		Notes:	
Message Time:		Received:	07-11-2006 13:44
Action:	save	Status:	replaced
Destination:	discussionforum	Version:	1

Back

Content:

Preferences UNCLASSIFIED

ID:	402870860c5e2aa6010c5e2d67140008
Signature:	test 3
User:	

ID:	402870860c5e2aa6010c5e2d67140008
First Name:	Christopher
Last Name:	Snapp
Email:	snappc@low.dev.cie.mil

Back

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